

The Crash Of General Aviation: A Public Choice Perspective

By
William Keith Stockman

Summer Semester 1996
George Mason University
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The Crash Of General Aviation: A Public Choice Perspective

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University.

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ABSTRACT

THE CRASH OF GENERAL AVIATION: A PUBLIC CHOICE APPROACH

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George Mason University, 1996

Dissertation Director: Dr. Charles K. Rowley

Using the public choice and law and economics approaches, this dissertation centers on how excessive rent-seeking contributed to the decline of an entire industry. While Olson's 1982 The Rise and Decline of Nations takes the broad view of how a nation can decline under rent-seeking, this research will show how this occurs for a particular segment that makes up part of the national economy. In this case, I focus attention on the American general aviation single-engine piston industry and show how two decades of rent seeking, especially by the legal profession, has reduced this industry's output by over ninety-five percent. Using a public choice framework, my research provides explanations for the rising costs of flying, the drop in demand for new general aviation aircraft and the recent attempts by the general aviation industry to reverse the market decline. The research will show how many of the liability theories put forth by law and economics scholars fail to achieve their efficiency claims. After carefully examining the structural characteristics of the relevant institutions and the motives of the interest groups involved, I use a geographically based voting model to analyze support for the 1994 General Aviation Product Liability Reform Bill. The results generally support the theory that the legal profession opposed the bill while states with aviation interests supported the measure.

Chapter 1. Introduction

The American General Aviation (GA) aircraft industry has been the world leader in the production and sale of small, single engine propeller aircraft since the industry's inception in the early 1930s. Recent history has seen this industry decline from a peak production of over 15,000 aircraft per year¹ to the current level of less than 600 per year. This decline coincided with the rising fuel prices of the late 1970s and the economic downturn of 1980. Many industry observers thought the initial decline was part of the overall business cycle that would soon reverse itself. The general economy has long since recovered while this industry has continued to decline.

This research investigates the decline of the general aviation² industry using the public choice approach. My basic thesis is that special interests and rent-seeking contributed to the downfall of the piston segment of the general aviation industry. While Olson (1982)³ takes the broad view of how a nation can decline due to rent-seeking, this research shows how this occurs for a particular segment of the national economy. In this case, I focus attention on the American general aviation industry and show how two decades of rent-seeking, especially by the legal profession, have reduced this industry's output by over ninety-five percent. Rent-seeking produces negative Pareto-relevant externalities and

¹ Aerospace Industries 1993-1994 Facts and Figures, p. 30.

² Throughout this paper whenever I mention general aviation, I am referring to the single-engine piston market unless otherwise specified.

³ Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982).

dead weight losses, so a major part of this research focuses on identifying those added costs and losses.

The general aviation industry and its users attempted to reverse this situation by using a public choice approach--they lobbied and obtained favorable legislation to protect a segment of their industry. In August 1994, President Clinton signed the General Aviation Product Liability Reform Bill after a decade of lobbying by the general aviation interest groups. This law exempts general aviation manufacturers from most liability suits for aircraft 18 years old or older. Before this legislation, companies like Cessna Aircraft faced unlimited liability for all aircraft ever produced under its license, over 120,000 planes in Cessna's case. Therefore, passage of this bill became a priority goal for the general aviation lobby as a partial solution to the industry's economic downturn and as partial rent protection from litigation.⁴ Of interest to public choice scholars is how did this legislation come into being, who supported it and who will gain from its passage.

The typical aircraft in this study is a single piston engine, four-passenger plane. I concentrate on this plane because it forms the basis on which all of general aviation builds. These single engine piston aircraft represent the first and most important step to careers in aviation, to incorporating aircraft in one's business environment or personal lifestyle and serve as the stepping stone to owning larger aircraft. Hence, if there is a dramatic failure in this market segment, it will eventually affect the follow-on markets for larger and more sophisticated aircraft. Though I concentrate on these small personal aircraft this still includes almost 76 percent of the total current active aircraft.⁵

⁴ Rowley, Charles K. and Robert D. Tollison, "Rent-Seeking and Trade Protection," Swiss Journal of International Relations, 1986, pp. 141-166.

⁵ As of December, 1992, there were 276,985 U.S. registered aircraft of which single engine piston aircraft numbered 209,688. The FAA estimated that 75 percent of those registered were actively

General aviation consists of the aircraft manufacturers, parts suppliers, airports, support facilities, and the pilots and support personnel. The following data⁶ characterizes the general aviation problem.

- By 1992, new aircraft production declined 95 percent to a post-WWII low. Prices for an average 4-seat, single engine piston aircraft rose from \$45,000 to over \$140,000.
- In the period from 1981 to 1991:
 - Active pilots declined by 15 percent.
 - The active general aviation aircraft fleet declined by 7 percent.
 - Public use airports declined by 12 percent.
 - The number of fixed-base operators (providers of services at airports) declined by 35 percent. Forty-three percent of the remaining fixed-base operators showed operating losses on declining revenues in 1991.
- In the period from 1983 to 1992:
 - All general aviation aircraft hours flown per year dropped 25 percent from 35.25 million to 26.5 million.
 - Single engine piston aircraft hours flown per year dropped 22 percent from 23.1 million to 18.1 million.
- In 1980 there were 29 US and 15 foreign manufacturers of piston-engine aircraft. In 1992, there were 9 US and 29 foreign manufacturers--a reversal.
- By 1992, general aviation manufacturing jobs declined 46 percent and jobs in piston-engine manufacturing declined 74 percent.

These facts describe an industry that has suffered a major decline. As I detail later, rising prices hurt sales, but declines in complementary resources and a decline in pilots also played a major role. Flying involves more than just having access to an inexpensive aircraft and low operating costs. Pilots require convenient airports, maintenance and

flying. This excludes jet powered aircraft, multi-engine piston aircraft, helicopters, gliders, blimps and balloons. 1992 General Aviation Activity Survey, FAA-APO-93-10

⁶ "Revitalization of General Aviation," Paul Fiducia, Executive Director, Small Aircraft Manufacturers Association, 1992.

training facilities, and a reasonable flying environment to operate within. Major changes in these key areas negatively affected flying.

In the second chapter, I present an introduction to the basic public choice theories that underlie this dissertation. I introduce the theory of rent-seeking and rent-protection and its inefficient use of resources. This follows with a discussion of the theory of regulation and how interest groups attempt to gain and protect wealth transfers and to deter competition. I discuss Olson's theory of the decline of nations and how rent-seeking plays a critical part. A discussion of interest group formation and activities provides a background to understand the various general aviation opponents and supporters.

A key area of discussion centers on the structural aspect of government as it affected the passage of the General Aviation Product Liability Reform Bill. The traditional Chicago viewpoint⁷ tends to ignore institutions, while the Virginia approach⁸ champions this area of research. This focus on institutions proves to be an important factor in the passage of the general aviation liability reform bill. The last sections of this chapter consider strict liability and the role of the legal profession. I demonstrate how special interest groups supporting the legal profession manipulate the legislature and the judicial system to increase their personal wealth and how strict liability increases these wealth transfers.

In the third chapter, I describe the downward trend in the general aviation industry and show possible reasons why this has occurred. This decline coincided with the rising fuel

⁷ Becker, Gary. "A Theory of Competition Among Pressure Groups for Political Influence," Quarterly Journal of Economics, 1983.

Stigler, George, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Systems, Vol. 2, Spring 1971, pp. 3-21.

⁸ Shepsle, Kenneth A., and Barry R. Weingast. "Structure-Induced Equilibrium and Legislative Choice." Public Choice, Vol. 37, No. 3, 1981, pp. 503-519.

prices of the late 1970s and the economic downturn of 1980. Many industry observers thought the initial decline was part of the overall business cycle that would soon reverse itself.⁹ The general economy has long since recovered while this industry has continued to decline. I believe the reason for that decline was the accumulation of coerced wealth transfers that affected the industry and the users of its products.

This chapter provides background information on aspects of aviation that have changed, thus causing movement along the demand curve. Key aspects of this shift are the rising prices of new aircraft, the decrease in supporting infrastructure, the rise of regulations, and the rising cost of liability. The major insight from this chapter is that general aviation declined under the aggregate weight of several different shocks, most of which were due to interest group pressure. The failure to recover from this decline, I argue, is primarily due to rising liability costs.

The fourth chapter considers the efficiency theories of law and economics and how the move toward strict liability has encouraged rent seeking. Landes and Posner¹⁰ (1987) and notably Shavell¹¹ (1980) embraced product liability law because they believe strict liability creates incentives for optimal accident reduction. By making the manufacturer liable, incentives to improve safety through innovation will be created. Hence, they believe it is "a system for bringing about an efficient allocation of resources to safety." I show that this has not occurred as theorized because of the externalities created by strict liability. The law and economic theorists failed to consider the moral hazard problem of

⁹ Rodgers, John; Director of the Office of Aviation Policy and Plans, Federal Aviation Administration, Presentations at the 1992, General Aviation Forecast Conference, Remarks contained in conference proceedings, FAA-APOI-92-3, March 1992.

¹⁰ Landes, William M. and Richard A. Posner. The Economic Structure of Tort Law, Harvard University Press, 1987, pp. 54-84.

¹¹ Shavell, Steven, "Strict Liability versus Negligence," 9 Journal of Legal Studies, 1980, pp. 1-25.

the legal profession and the resulting rent seeking by lawyers. As Stigler (1971) pointed out, the benefit to the interest group often falls short of the damage to the rest of the economy.¹² This accurately describes the damage done to general aviation by the excessive litigation that has been encouraged by the move toward strict liability.

Steven Shavell (1980) considers reducing the level of a potentially dangerous activity by making the injuror strictly liable.¹³ Under strict liability, Shavell maintains that the outcome is efficient regardless of customer perceptions. Because manufacturers must pay the full social cost, which includes accident losses, they will take proper care and sell the product at its "true" social cost. Customers facing this "correct" social price will purchase the "correct" amount.¹⁴ Without this correct social price, buyers will lack sufficient information to judge the true risk. Shavell claims that only if buyers correctly perceive risk, will the outcome be efficient. If buyers underestimate the risk, the price will be less than the socially correct price and too much will be purchased. In general aviation's case, high prices reduced sales and flight activities.

In the fifth chapter, I examine the actual industry response to increased liability and compare the actual outcome with the theoretical predictions. The results show that small aircraft safety has stalled due to a lack of innovation, primarily due to a lack of funds for new research and development. Liability has significantly raised the cost of new aircraft which reduced their sales. This rise in price and resulting drop in sales does provide

¹² Stigler, George, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Systems, Vol. 2, Spring, 1971, pp. 3-21.

¹³ Shavell, Steven, "Strict Liability versus Negligence," 9 Journal of Legal Studies, 1980, pp. 1-25.

¹⁴ This assumes the product or activity is a normal good, so as the price rises, less will be purchased thus reducing the dangerous activity and the societal costs.

support for Shavell's theory that customers facing the true social cost of their activities will adjust their consumption of that activity.

The sixth chapter investigates the recent passage of the General Aviation Revitalization Act of 1994. I show how a maturing special interest group along with general aviation manufacturers successfully pressured Congress to attain group benefits. The 1994 Act set an 18-year liability limit for new aircraft, thus limiting the ability to rent seek against manufacturers through litigation. As mentioned earlier, the literature discusses many factors that contribute to successful wealth transfers. These included the structure and rules of government, the composition of the legislature and the structure and characteristics of the interest groups themselves. In this analysis, I show how the change in the legislative structure and rules allowed for passage of the bill as well as describe the relationship between the main interest groups and the passage of the bill.

Using a model similar to Faith, Leavens and Tollison (1982)¹⁵, I show how the support for the 1994 Act demonstrates the impact of the special interests that supported and opposed the legislation. I employ a geographically based model that considers congressional district characteristics that might affect a district representative's support. This analysis indicates that states with general aviation industries supported the bill while districts represented by lawyers tended to not support the bill.

Chapter seven contains some final insights into the industry's problems and conclusions. This research is motivated by the desire to determine what has caused the current deep recession in general aviation and what course of action -- if any -- might

¹⁵ Faith, Roger L., Donald R. Leavens and Robert D. Tollison. "The Antitrust Pork Barrel," Journal of Law and Economics 25, October 1982, pp. 329-342.

reverse it. To do that, one needs a theory of how the market works to devise effective policies or actions. From a macro and industry viewpoint, the question remains whether appropriate policies and regulations can reverse this trend. If this is just a cyclical event due to a supply shock (such as overproduction in the 1970's), then the market should eventually correct itself given time. However, if consumer demand has shifted to substitutes that provide recreation and transportation, the solution may be quite different. It might be that competing technologies and activities have made general aviation flying unacceptably expensive by comparison, and therefore, permanently reduced demand to low levels. Yet, a different view is the industry has suffered from wealth transfers due to successful rent-seeking. This implies counter-rent-seeking policies by general aviation might be effective.

The general conclusion is the latter, that general aviation's problems are due primarily to adverse interest groups' activities. This industry and its users have fallen victim to the successful rentseeking of others and have only recently had any success in reversing this trend. Though durable good's models do offer some explanations for the industries woes, the majority of the evidence points to a public choice explanation. Thus, the industry should look toward public choice solutions if it desires to reverse the current trend.

Chapter 2. Theories of Public Choice and Law and Economics

"I saw an interesting sight today," Mark Twain said, "a politician with his hands in his *own* pockets."¹

Over a hundred years before the academic birth of the field of Public Choice, Mark Twain obviously understood the idea of wealth transfers. Though Mark Twain intended the quote to be humorous, he made the correct observation that in return for brokerage fees, politicians take from one group and give to others. Public choice scholars since have extended Mark Twain's observation into politics using the tools of economics to discover, analyze and predict the actions of governments and special interest groups. This study of rent-seeking--groups investing resources to capture rents or wealth transfers--has provided significant evidence against a pure public interest theory of government. Public choice theories provide support that much of government exists to provide benefits to special interest groups while at the expense of the majority of the citizenry.

Mancur Olson (1982) takes a broader view of how these rent-seeking groups can adversely affect a nation's economy in The Rise and Decline of Nations.² Olson theorizes that as nations mature and interest groups infiltrate many aspects of society, the nation will decline. Olson uses the concept of nation's maturing to mean nations that have enjoyed

¹ Buchholz, Todd, New Ideas From Dead Economists, p. 241, Penguin Books, 1990.

² Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982), pp. 75-77.

long periods of peace and stability, free from major upheavals. As examples, Britain and the United States have been relatively free from the major wars of the twentieth century in terms of invasion or revolutions that totally disrupted the existing political infrastructure. Japan and Germany, however, have suffered major defeats in war that resulted in new political institutions as well as suffering the devastation of their physical and capital assets. Thus Great Britain and the United States would be considered mature. This stability in the mature nations allows the interest groups to create the infrastructure needed for maximum rent-seeking. This rent-seeking generates large costs for society which produces the economic decline. The resources that are consumed in rent-seeking can't be used to improve the consumer welfare so society is worse off. This then is a decline in the economy compared to what might have been possible without the rent seeking costs. Inefficient wealth transfers, bureaucracies and regulations generate the decline that occurs under rent-seeking. Olson writes in his book that:³

"It would be in the interest of those groups that are organized to increase their own gains by whatever means possible. This would include choosing policies that, though inefficient for the society as a whole, were advantageous for the organized groups because the costs of the policies fell disproportionately on the unorganized."

In the field of law and economics, Cooter and Ulen (1988) have written that certain liability rules can create efficient incentives both for the injurer and the injuree depending on the circumstance.⁴ The traditional, neo-classical approach had been to assign the losses to the party who can bear the risk of such a loss at least cost. This seems to imply that if we choose legal rules and procedures based on this efficient allocation of risk, then we

³ Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982), p. 37.

⁴ Cooter, Robert and Thomas Ulen, Law and Economics, Harper-Collins, 1988, p. 362.

should receive maximum benefits at minimum cost. In theory, this seems reasonable enough.

When we combine the efficiency theories of law and economics with real world rent-seeking behavior as described by public choice scholars, inefficiencies arise. Instead of actions that rationally conserve scarce resources and maximize the most efficient uses of those resources, we find actions that maximize wealth transfers to interest groups in a negative sum game. The combination of these two diverse fields of research provides a useful tool to study how markets or in Olson's view (1982), even nations, might decline.

A major goal of this research is to approach this subject from a positive economic viewpoint, not a normative one. Milton Friedman (1953)⁵ wrote that:

Positive economics is in principle independent of any particular ethical position or normative judgments. As Keynes says, it deals with "what is," not with "what ought to be."

Friedman raises the key point that often there are strong normative positions that might sway our analysis. In the case of aviation liability, we have plaintiffs who have suffered tragic losses of life, income and property. The manufacturers have experienced serious economic downturns due to the rising costs of liability. Thus, proponents of either side have strong convictions about liability and the actions of various interest groups that affected this industry. Friedman further wrote that:⁶

⁵ Friedman, Milton, Essays in Positive Economics, University of Chicago Press, 1953, p. 4.

⁶ Friedman, Milton, Essays in Positive Economics, University of Chicago Press, 1953, p. 6.

The ultimate goal of a positive science is the development of a "theory" or "hypothesis" that yields valid and meaningful (i.e., not truistic) predictions about phenomena not yet observed.

Friedman correctly focuses in on the key issue that should guide this effort--does the theory of public choice predict what happened to this industry and does it provide support for Olson's theory of national decline. Where appropriate, I acknowledge the prevailing normative positions, but then concentrate on the positive theory and its relevance to this situation.

In the following sections, I introduce the general theories that support this public choice approach to the downfall of the general aviation industry. The theory to be supported is this--special interest groups successfully organized and gained wealth transfers at the expense of the general aviation industry and its users. This rent seeking manifested itself in the form of regulations, legislation, taxation and judicial litigation. The degree of success or failure was a function of the interest groups on both sides as well as the governance structures and their rules that allowed the rent seeking. This literature lays the foundation explaining the wealth transfers detailed in the following chapters.

Rent Seeking

Public choice theories maintain that private interest groups pursue policies, programs and regulations due to their own self-interests rather than a strict concern for the public interest. Olson suggested that special interests emerge to take advantage of rational ignorance among the electorate by offering political gains to vote-seeking politicians who

support the intense, concentrated interest of the few rather than the weak, diffused interest of the many.⁷ These private interests expend resources to gain rents or to protect existing rents. As I demonstrate in the case of increased litigation in the judicial system, these special interests do not primarily engage in productive activity. Rather they focus their efforts on gaining the wealth of the unorganized majority while expending valuable resource in the process. Thus, this is a negative sum game since rent seeking produces nothing new while consuming existing wealth.

The public choice literature documents the idea of wasteful, inefficient rent-seeking. Tullock (1967) made the initial claim that rent seeking is inefficient since competitors for the monopoly profits expend valuable resources that go neither to consumer nor to producer surplus.⁸ Posner (1975) entered the picture describing Tullock's costs of rent-seeking as "the value in social cost to society of the opportunity cost of the resources used to obtain the rents plus the efficiency loss."⁹ The social costs take the form of bloated bureaucratic infrastructures, resources expended by lobbyists on all sides of the issue and possibly the wealth transfers from the majority to the special interests. Rent seekers battle over monetary profits, regulations, patents, property rights and anything that might benefit their special interests. In the case of flying this involves regulations, the use of airports and airspace, raising rival's costs and attacking manufacturers' wealth.

⁷ Olson, Mancur, *The Logic of Collective Action*, Harvard University Press, 1965, pp. 159-167.

⁸ Tullock, Gordon, "The Welfare Costs of Tariffs, Monopolies, and Thefts," Western Economic Journal, June 1967, pp. 224-232.

⁹ Posner, Richard, "The Social Costs of Monopoly and Regulation," The Journal of Political Economy, August 1975, pp. 807-827.

George Stigler (1971) has written that "regulation is acquired by the industry and is designed and operated primarily for its benefit."¹⁰ Regulations can take the form of beneficial rules to limit entry or create a monopoly situation. They can also restrict competition or raise competitors' costs. Stigler ignores public interest theories, assuming that all regulations are due to interest group desires. He points out that interest groups often desire regulatory relief since it is often less obvious than other forms of help such as cash subsidies which might attract entry. Thus, this form of help can be useful especially if it is narrowly focused. Pressure groups desire regulation to bar entry and to maintain monopoly prices.¹¹ Neoclassical microeconomic theory would argue that successful firms invest resources to increase efficiency and competitiveness. Public choice theories like Stigler's argue that firms often can gain more advantage through government sponsored monopoly regulation instead of minimum cost microeconomic control. Once rents are gained, interest groups also engage in rent protection to maintain their profitable situations.

With his most important point, Stigler (1971) asserts that:¹²

When an industry receives a grant of power from the state, the benefit to the industry will fall short of the damage to the rest of the community.

That is, regulations, price supports, and restrictions create inefficiencies that adversely affect the economy. Using Stigler's example (1971), laws that restricted trucking

¹⁰ Stigler, George, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Systems, Vol. 2, Spring, 1971, p. 3.

¹¹ If many firms are capable of entering a market and producing, then no firm is able to earn more than normal profits in the long run, thus this is a contestable market. However, if firms can deter or prevent entry, prices may rise above marginal cost and above normal profits are possible. In the case of general aviation, the Federal Aviation Administration has enacted strict regulations of design and testing of new aircraft which effectively limits entry.

¹² Stigler, George, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Systems, Vol. 2, Spring, 1971, p. 10.

companies to pre-assigned routes protected major trucking firms while raising costs to consumers. In the case of aviation, I suggest that many of the rules and regulations serve the purpose of restricting entry or raising costs of general aviation, hidden under the veil of safety or public interest. In Chapters 4 and 5, I present arguments and evidence that the shift from negligence toward strict liability encourages increased litigation (that benefits trial lawyers) harming entire industries.

Peltzman (1976) theorized that rent-seeking interest groups fail to receive the full rents available--they are "short-changed."¹³ The theory centered on the assumption that interest groups on both sides will compete until the marginal cost equals the marginal gains.¹⁴ The winners will only receive the full rents if they are unopposed. Thus as we move further away from Peltzman's theory, it is quite possible that neither side will gain fully and both might expend valuable resources which in total exceed the total benefits earned. Gary Becker's interest group model (1985) incorporates competition among competing factions.¹⁵ He divides the groups into taxed and the subsidized, arguing that interest groups dictate political outcomes of who pays and who receives. In Becker's model, the most efficient competitors for transfers will earn them, though the losses from rent-seeking as described by Tullock (1967) are not efficient.

McChesney (1987) adds to Stigler's theory by defining the role of the politician in the process and discussing the additional lost resources this entails.¹⁶ He points out that rent-

¹³ Peltzman, Sam, "Toward a More General Theory of Regulation," The Journal of Law and Economics 19, no. 2, August 1976, pp. 211-240.

¹⁴ In Peltzman's theory, he is specifically modeling the cost of votes and or support of the competing groups. This idea forms the basis for legislative vote trading.

¹⁵ Becker, Gary, "Public Policies, Pressure Groups, and Dead Weight Costs," Journal of Public Economics 28, 1985, pp. 329-347.

¹⁶ McChesney, Fred S., "Rent Extraction and Rent Creation in the Economic Theory of Regulation," Journal of Legal Studies, vol. XVI, January 1987, pp. 101-118.

avoidance or defending against regulation can be just as costly as rent seeking. He suggests that politicians might threaten to impose new regulations or costs to extract private rents from interest groups or industries. Currently, Congressional leaders are threatening to privatize the Federal Aviation Administration to improve safety and to reduce the federal budget.¹⁷ General aviation has responded with increased lobbying of the Federal Aviation Administration and the key Congressional committees as a rent avoidance measure.

Taking a broader view, Olson (1982) theorized that as nations mature and interest groups infiltrate all aspects of society, the nation will decline.¹⁸ The nation's decline is due to the inefficiencies resulting from wasteful rent-seeking and the resulting inefficient wealth transfers. Olson points out that lobbying by interest groups results in more complex and burdensome regulation. The rent-seeking creates a dynamic process where competing groups attempt to capitalize on the regulation's benefits while others attempt to remove it or find loopholes to exploit it. The lobbying creates a whole new group that specializes in creating, understanding and working with these regulations. Once in place, "regulation specialists" will resist any attempt to deregulate or simplify the law.¹⁹ Olson points out that this is why lawyers vehemently opposed no-fault insurance since it reduced the need

¹⁷ In early 1995, some congressmen proposed privatizing the Federal Aviation Administration using the U.S. Postal Service as the model. This would remove the agency from the Federal budget and force its users to pay the full costs of the services provided. The initial impact to the general aviation community would be a dramatic increase in costs since few user fees are currently charged.

¹⁸ Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982), pp. 36-74.

¹⁹ For a discussion of deregulation, see McCormick, Robert; William Shughart and Robert D. Tollison in "Disinterest in Deregulation," American Economic Review, No 74, December 1984, pp. 1075-1079. In this paper, the authors show that with durable rents and up front rent-seeking, there is little if any gain to deregulation since all rents are assumed to be initially dissipated. A more general theory of deregulation is contained in "Dispelling the Disinterest in Deregulation," by Michael Crew and Charles Rowley in The Political Economy of Rent-Seeking, Rowley, Tollison and Tullock (eds.), 1988, pp. 163-178. This paper assumes that in the absence of up-front durable rents, ongoing rent-seeking is evidence of continued social loss so interest group sponsored deregulation is likely.

for lawyers and lawsuits to determine responsibility. In the case of general aviation, the Trial Lawyers Association opposed aviation's tort liability reform bills throughout the 1980s, since reform would reduce their ability to rent-seek.

Olson (1982)²⁰ writes that interest groups often attempt to limit entry to protect monopoly rents within their profession.²¹ Among lawyers where the opportunities for litigation are not strictly limited, entry into the legal profession has been relatively open.²² Thus, it should come as no surprise that as more lawyers enter the profession, we see increased levels of rent-seeking litigation. With increased advertising and marketing by the legal profession, the general public today views litigation as a normal solution to many problems. Though the public has increased its willingness to sue, the legal profession has managed a subtle type of entry barrier to control access to litigation--thus increasing their demand. Since the lawyers and judges create the rules governing the judicial system, one must essentially use a lawyer when entering into litigation. Thus the legal profession created a barrier to entry for laymen trying to deal with litigation. Using a simple microeconomic analogy in Figure 1, the increase in the number of lawyers shifted the supply curve downward, and at the same time barriers to the public shifted the demand curve upward. We can say that the shift in supply and demand increases the quantity of litigation, but the equilibrium price remains unclear. This trend toward increased litigation and its increasing cost has been critical to general aviation, since general aviation has been

²⁰ Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982), pp. 36-74.

²¹ For a discussion of occupational regulation see McCormick, Robert F. and Robert D. Tollison. Politicians, Legislation and the Economy. Boston: Martinus Nijhoff, 1981.

²² I realize that getting accepted to law school, graduating and passing the bar is no small accomplishment. However, the number of lawyers has significantly increased in the last thirty years, indicating relatively free entry to those willing to make the investment of time and money. In 1971 there were 324,818 lawyers compared to 723,189 in 1988 (Martindale Hubbard Law Directory). There were also increases in the number of law degrees conferred. In 1960, 9,240 law degrees were conferred. In 1989, 35,567 law degrees were conferred. Digest of Educational Statistics. 1990.

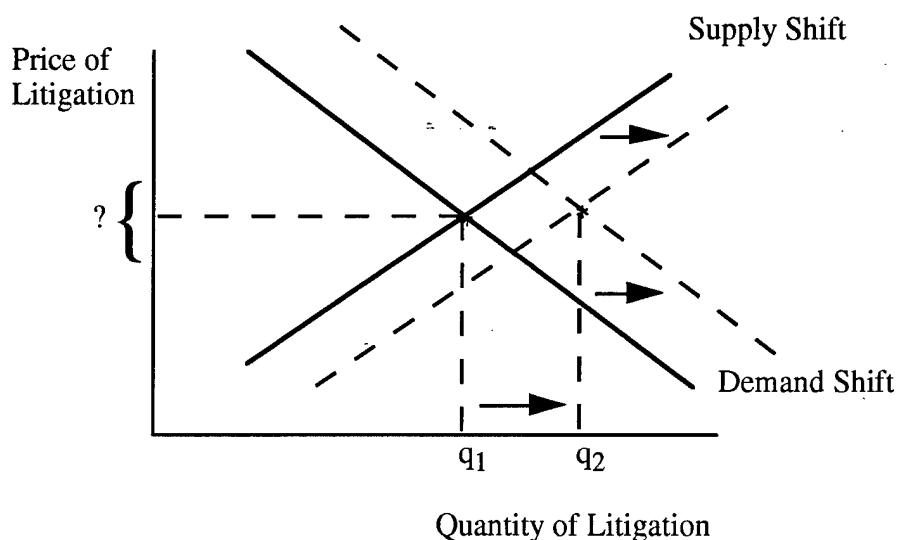


Figure 1. Supply and Demand of Litigation

one of the legal profession's new targets. As Chapter 5 discusses, general aviation has seen a large increase in litigation in recent years even though flying has become safer²³ and fewer aircraft are flying fewer hours.

Olson (1982) maintains that interest groups' control of the economy slows down the growth rate of a country, the ability of the country to adapt resources and the ability to innovate with new technologies. He states that their regulations, restrictions, tariffs, legal systems and industry controls result in very inefficient resource allocations that raise costs. This reduces the incentive to innovate and often constrains the direction and magnitude of growth. These inefficiencies represent the main factors that contribute to Olson's claim that interest groups slowly cause the decline of maturing nations. Olson's analysis is relevant to the aviation industry since the lawyer-inspired strict liability movement (which

²³ I discuss general aviation's safety record in Chapter 4.

was in part inspired by the law and economics movement) has deterred the single-engine piston industry's growth and ability to innovate.²⁴

Additionally, Olson correctly states that there is no incentive for special interests to minimize the social costs they generate as long as their wealth continues to increase. This inefficient approach by interest groups results from their short term and self-interested outlook on the economy. This selfish wealth maximization goes back to the Hobbesian approach where on some margin, it is more cost-effective to steal from others than to produce yourself. This only works in the short run since eventually the loser stops producing, runs out of wealth or creates an institutional response to prevent stealing. This failure of rent-seekers to internalize the external cost of their actions is the basis for Olson's theory of the decline of nations.

The idea of rent-seeking as public theft is not new to public choice scholars. Though not using the term rent-seeking, Knight (1971)²⁵ does refer to "predatory activity" while Bentley (1969)²⁶ speaks of "appropriative activities." Williamson (1975)²⁷ calls it "self-interest seeking with guile." Brown (1987) describes the use of "invasive force" for inefficient coercion to appropriate other's rightful property or wealth.²⁸ In this study I pose the question of whether rent-seeking in general aviation is just a form of Coasian property right competition or government sanctioned public theft. Key to this discussion

²⁴ Viscusi and Moore, "An Industrial Profile of the Links between Product Liability and Innovation," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 81-119.

²⁵ Knight, Frank H., Risk, Uncertainty and Profit, Chicago: University of Chicago Press, 1971.

²⁶ Bentley, Arthur, Makers, Users, and Masters, Syracuse University Press, 1969.

²⁷ Williamson, Oliver, Markets and Hierarchies: Analysis and Antitrust Implications, 1975.

²⁸ Brown, Pamela, Surplus Wars: Toward a Positive Theory of Rent-Seeking, Phd Dissertation, George Mason University, 1987.

will be determining the flow of costs and benefits, including an accounting of the transaction costs.

In this study, I provide evidence that these theoretical concerns mentioned above do occur and that they can adversely affect an industry. In particular, the study shows that rent-seeking by the legal profession on the single engine piston aircraft industry has drastically increased costs, and thereby prices, contributing to the ninety-five per-cent drop in sales. I also show how other groups through successful rent-seeking have managed to increase the costs of flying through regulations, changes in property rights and even deregulation.

Interest Group Formation and Effectiveness

A second major factor in the study of the general aviation industry is the interest groups themselves and the factors that have contributed to their success or failure.²⁹ The aviation industry and its users have been in existence since the early 1900s, yet they found themselves unable to defend against outside rent-seekers. A cursory view of the history of this industry shows that several different groups acting independently over time gained power and influence compared to general aviation interests. These groups successfully achieved political power and created wealth transfers from general aviation to themselves.³⁰

²⁹ Typical pro-aviation interest groups are the Aircraft Owners and Pilot's Association (AOPA), the General Aviation Manufacturers Association (GAMA), the National Aircraft Resale Association (NARA), the National Business Aircraft Association (NBAA), the National Air Transportation Association (NATA), the Small Aircraft Manufacturers Association (SAMA) and dozens of other state and national associations that support manufacturers, suppliers, and providers of aircraft services.

³⁰ In Chapter 5, I discuss how developers, homeowners, and county governments have restricted airport operations and caused the closure of others. Furthermore, I discuss the financial burden that litigation has placed on this industry, even though the manufacturers are often found innocent in most cases.

A major area of discussion in this study focuses on the characteristics of these groups and how they changed over this period to allow them to gain political clout.

Olson (1971) suggested that small groups tend to be more effective, easier to organize and control, and easier to get agreement and participation when group leaders can control the members, so smaller is better.³¹ This reduces free rider problems due to the smaller numbers and the ability to monitor and sanction members. It is also easier to gain benefits for a small, narrowly focused group, since this leaves a much larger group that can be taxed or regulated to affect the wealth transfer.³²

Olson (1982) noted that large groups seem to offer a paradox, since most people would assume larger numbers are more effective, yet he notes:³³

"The paradox, then, is that . . . large groups, at least if they are composed of rational individuals, will *not* act in their group interest."

He is simply stating that large groups tend to encourage free-ridership where individuals assume that their efforts are insignificant and that others will solve the problem for them. Free ridership is a key issue with general aviation where almost one million pilots and industry workers all watched the industry decline, but little organized action took place to resolve the problems.

This litigation essentially transfers much of the industry's wealth to the legal profession through defense expenses and judgments to plaintiffs.

³¹ Olson, Mancur, The Logic of Collective Action, Harvard University Press, Cambridge, Massachusetts., 1971, pp. 53-65.

³² Becker's model (1985) also assumes that the successful groups tend to be small relative to the taxed group using an argument similar to Olson's work.

³³ Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities, New Haven: Yale University Press, 1982), p. 18 .

Gary Becker (1983) investigated diminishing returns to group size in political markets.³⁴ The optimal size coalition was reached when the marginal benefits of organizing equaled the marginal costs of organizing. Becker wrote that the "subsidized group is smaller than its most efficient size because an increase in the number of members reduces the net income per member if efficiency does not significantly increase." This idea of marginal benefits equaling marginal cost supports the concept that big is not necessarily better and that big is usually worse in terms of the cost of controlling interest group cooperation and output.

There is a key difference between the interest group theory of Olson and that of the Chicago school represented by Stigler and Becker. Olson believes that government sponsored wealth transfers are due to the selfishness, envy and narrowly focused morality of the interest groups themselves. On the other hand, Rowley (1993) writes that the Chicago school believes that:³⁵

"rather than by any explicit public interest design, political markets are viewed as technically efficient mechanisms for satisfying the redistributive preferences of members of the decisive interest groups."

³⁴ Becker, Gary, "A Theory of Competition Among Pressure Groups For Political Influence," The Quarterly Journal of Economics, Vol. XCVIII, August 1983, pp. 371-396.

³⁵ Rowley, Charles K. (Ed.). Introduction to Public Choice Theory. Volume I, Edward Elgar Publishing, 1993, pp. iv-xxvi.

Further, Rowley (1993), referring to Reder³⁶ (1982) notes:

"Those who acknowledge other arguments in his utility function--altruism, ideology, patronage and the like--are viewed with grave suspicion, categorized even as sociologists."

Becker (1985) has written that Olson's condemnation of special interest groups is "excessive because competition among the groups contributes to the survival of policies that raise output." Further he states that:

" . . . pressure groups cannot easily obtain very large subsidies, since I have shown (using his compensation model) that large subsidies stimulate countervailing pressure by those taxed to finance the subsidies."

Becker suggests that high cost wealth transfers such as Olson's can only occur when there is unequal access to political markets such as in totalitarian regimes or other non-democratic systems. I disagree and take viewpoint that most government sponsored wealth transfers are due to the institutional environment that allows for the narrowly focused transfers lobbied for by the interest groups.

If a special interest can somehow control free-ridership and organizational costs, then larger groups are possible and might offer more political clout. The key revolves around the organization's ability to offer significant non-public benefits. This may be in the form of information, licensing, certification or other group specific benefits. In the case of the Aircraft Owners and Pilots Association, members receive information on flying,

³⁶ Reder, M.W., "Chicago Economics: Permanence and Change," Journal of Economic Literature, 20, 1982, pp. 1-38.

regulations, aircraft ownership and repair, legal support and other areas pertinent to this profession in exchange for their annual dues. Group support for these main benefits lowers the marginal costs of lobbying on behalf of the membership. Thus a group that forms as a professional association or due to a shared interest such as flying can apply political pressure at a much lower cost per person.³⁷ As Olson (1971) points out, the success of an interest group does not necessarily depend on group size. Instead, a group's ability to gain favorably legislation or special treatment is more of a by-product incidental to its other activities. We shall see that in the case of general aviation, pilots joined various associations to avoid rising costs for key services. As a result, the associations not only provided these services, but also educated the pilots on beneficial political agendas requiring their support.

In Chapters 4 and 5, I show how these factors allowed for the rise of successful rent-seeking by aviation's opponents and rent-seeking attorneys. Using the same approach, I discuss how the aviation community failed initially to overcome the barriers to successful interest group formation but later gained limited success.

Structural Aspects of Government in Rent-Seeking

Another pertinent area of research in public choice that directly bears on this study focuses on the structure of government. Major public choice theories of wealth transfer require some sort of governance structure to execute the transfers. Without some form of government as the middleman, rent-seeking would just involve attempts to directly steal

³⁷ Olson (1971) is just making an economy of scope argument, since the other non-political activities support the initial costs of organization and recruitment.

from each other. Thus, when dealing with government intermediaries, these structures and their rules are critical to the success or failure of special interest's agendas. In this case, I show that the legal community's access and influence on the Congress and judicial system allowed for rules that enhanced the legal profession's ability to rent-seek. I also show how the general aviation community themselves took advantage of a structural change to benefit itself in an attempt to curb the legal profession's rent-seeking.

Previous work by Chicago scholars assumed a simple bureaucrat who was the middleman between rent-seekers and suppliers of the wealth transfers. Stigler (1971), Becker (1983)³⁸ and Peltzman (1976) dominated this school of thought, describing a regulator heading a bureau that provided beneficial regulation to interest groups. Peltzman modified this to consider competition among rent-seekers, but still ignored the government structure. Their work implies that structures do not matter and that by leaving them out, adequate models can be had that explain public policy. This claim lacks any significant justification as argued by Moe (1987).³⁹

The importance of governance structures has been a major accomplishment of the Virginia School and other public choice scholars. This group maintains that structure is critical for any explanation of legislative output. Niskanen (1971) looked at the role of government structure, developing a bureau-dominated model.⁴⁰ He recognized that any study of wealth transfers must consider the desires of the government agents that direct or control the transfers. In his model he assumed a bilateral monopoly relationship between

³⁸ Becker, Gary. "A Theory of Competition Among Pressure Groups for Political Influence," Quarterly Journal of Economics, 1983, pp. 371-396.

³⁹ Moe, Terry M. "An Assessment of the Positive Theory of Congressional Dominance," Legislative Studies Quarterly, XII, 4, November 1987, pp. 475-520.

⁴⁰ Niskanen, William A., Bureaucracy and Representative Government, 1971.

bureaus and Congress. The bureaus were the sole provider of the public good and Congress was sole purchaser for the public. Because of their monopoly supply positions, Niskanen believed that bureaus tended to oversupply the public good since they could present take-it-or-leave-it budget proposals. He modeled the bureaucrats as maximizing a utility function that contained such proxy variables as salary, perquisites of the office, public reputation, power, patronage, output of the bureau, ease of making changes, and the ease of managing the bureau. He maintained that all of these proxies with the exception of the last two were positive monotonic functions of the budget.

Weingast and Moran (1983) provided a different view of where control lies--a view I subscribe to in this research.⁴¹ They believe that congressional committees wield considerable power and that committees control the bureaus and their output. Weingast and Moran assume that Congressional committees set the real agendas through their tight control of legislation, funding, appointments and hearings on relevant issues through their gate-keeping powers. This strong control of agenda allows the committee to provide wealth transfers more than the median voter in Congress would normally approve. The key insight is that the committee may be acting contrary to a majority of the Congress, but the rules prevent contrary actions. Using research on the House of Representatives, Shepsle (1978) developed a model of self-selection to committees that affect House member's constituents.⁴² These committee members, in turn, give up areas of control for less important issues. Both of these theories provide a plausible explanation of why committees may act contrary to the full House and why they might hold such strong beliefs in key areas. General aviation found itself in this position when informal polls of

⁴¹ Weingast, Barry R. and Mark J. Moran. "Bureaucratic Discretion or Congressional Control? Regulatory Policy Making by the Federal Trade Commission." Journal of Political Economy 91, October 1983, pp. 765-800.

⁴² Shepsle, Kenneth A., The Giant Jigsaw Puzzle, University of Chicago Press, 1978.

legislators showed a majority supported its liability reform bill, but the committee refused to release the bill to the floor. The success of this bill depended on the rare filing of a discharge petition, signed by a majority of House members, that petitioned for the bill to by-pass the normal committee process. In Chapter 6, I detail this process and discuss what changes allowed this rather significant bill to by-pass the normally strong committee gate-keeping power.

Committee structure and rules provide stability as well as protection of special interests and durability of legislation. Shepsle and Weingast (1981) claim that the restrictions on legislative exchange (ability to propose, amend and modify bills) allow the committees to exercise extreme control over the Congressional agenda.⁴³ Hence, if something occurs to change these rules, the ability to control agenda may suffer and the majority may be able to force legislation contrary to committee desires.

McCormick and Tollison (1981) researched a key aspect of the composition of legislatures.⁴⁴ They looked at the labor supply of politicians and found those with the lowest reservation wages tended to be elected first. One profession proved particularly adept at combining outside income and government service--lawyers. Attorneys often serve as congressmen while continuing to serve clients, many of whom also depend on favorable government policies and actions. Conflicts of interest are hard to prove due to

⁴³ Shepsle, Kenneth A., and Barry R. Weingast. "Structure-Induced Equilibrium and Legislative Choice." Public Choice, Vol. 37, No. 3, 1981, pp. 503-519.

⁴⁴ McCormick, Robert F. and Robert D. Tollison. Politicians, Legislation and the Economy: An Inquiry into the Interest-Group Theory of Government. Boston: Martinus Nijhoff, 1981. This research focused on state legislatures, many of which are only in session part of the year. For the United States Congress, legislators essentially work full time so they have little opportunity to practice law. However, many congressmen are members of firms that will benefit from the legislative contacts and those firms continue to pay partners a share of the profits whether they practice full time or spend full time working in the Congress. Even if the Congressman cuts all ties with his previous firms or partners, serving in Congress will enhance his future legal pursuits. The 1993-94 House contained almost 36% lawyers, significantly higher than that of the general population.

privacy laws and attorney-client privilege. Thus, attorneys often have low reservation wages since they can capitalize on the legislative environment and contacts to enhance rent seeking.

Due to this profitable situation, attorneys disproportionally make up the Congressional membership compared to normal population demographics.⁴⁵ The legal profession uses this advantage to control the legislative agenda and to internalize the outside returns from passing laws. These lawyer-congressmen can use their positions on key committees to create wealth transfers to their profession and to defend existing situations. A prime example is membership on the Judiciary committees. These committees exercise gate keeping power over legislation pertaining to law and the judicial system. They have gate keeping power over the nomination of federal judges and key justice department appointees. This control of the key judiciary committees allows the legal profession to engage in rent-seeking and rent-protection. As I show in Chapter 6, this arrangement proved to be a major factor in general aviation's decline. Much of the damage to the industry resulted from increased litigation brought on by rent-seeking trial lawyers and protected by Congress's refusal to pass liability reform.

The federal and state judiciary and the court systems represent a second structural element in the rent-seeking system. Traditional theory views the judiciary as one of the three independent branches of government. As the interpreter of legislation and constitutional intent, the judiciary is part of the system of checks and balances on the legislative and the executive branches of government. Some recent public choice scholars have taken a different view of the role of the judiciary. They see the judiciary as providing

⁴⁵ At the time of the passage of the General Aviation Liability Reform Act, there were 160 lawyers in the House.

durability for the passed legislation. Anderson, Shughart and Tollison (1989) as well as Landes and Posner (1975) have written about the independent judiciary.⁴⁶ The consensus of these public choice scholars appears to be that judges are not independent since they must rely on legislatures for their budgets, perks and salaries. As such judges tend to support the legislature's efforts to provide long term wealth maximization.⁴⁷ These two studies both looked at independence from the view of which outside groups, either special interests or the legislatures had the ability to influence the judges.

In a later paper, Posner (1994) modifies his position on what judges maximize.⁴⁸ He argues that judges are rational maximizers who pursue the same goals as private individuals in society. He believes that most judges have utility functions that include such things as popularity, prestige, public interest, reputation, and avoidance of reversals. He states that judges vote their personal convictions and policy preferences. His analysis predicts that judges are susceptible to political influence, especially those elected for specific terms and facing re-election.

As Posner states, judges are not independent of the outside world. Rather, they are merely being promoted from one level of achievement to the next in the judicial hierarchy. Legislators and the President upon taking office are entering new careers in a total different

⁴⁶ Anderson, Gary M., William F. Shughart, and Robert D. Tollison, "On the Incentive of Judges to Enforce Legislative Wealth Transfers," Journal of Law and Economics, April 1989, pp. 215-228. Landes and Posner, "The Independent Judiciary in an Interest Group Perspective," Journal of Law and Economics, December 1975, pp. 875-911.

⁴⁷ Charles Rowley disputes this theory, stating it is somewhat far-fetched. He points out that the theory to the original Landes and Posner test has not stood up to econometric testing and that Posner admits the regression results are inconclusive (page 374). Rowley, Charles K., "The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique," Hamline Law Review, 12, Spring, 1989, pp. 355-83.

⁴⁸ Posner, Richard A., "What Do Judges and Justices Maximize?" Supreme Court Economic Review, 1994, pp. 1-41. In this paper, Posner focuses on Federal Appeals Court judges, but predicts that his results are applicable to most judges at other levels.

"chain-of-command." Judges do not. They are merely lawyers moving to the other side of the bench. There is no reason to expect that they will forget their ties to the legal community and their fellow lawyers who are trying to maximize rentseeking. This is comparable to allowing a construction contractor or union leader to become the maker of building codes for a county. In this case, no one would be surprised if the new commissioner enacted regulations that resulted in increased work for contractors or union labor. Judges are no different. They can use judicial interpretation to move toward strict liability. There is increasing litigation and through this, increased aggregate lawyer income. Traditional public choice would look at their decisions to see if they tended to favor one group over another--such as democratic or republican agendas. This totally misses the dependency. They only need to increase the amount of litigation to transfer wealth to their favorite special interest group--other lawyers and themselves. They have no incentive to do otherwise. Increased litigation fills the courts that provide them with job security, larger staffs, possibly larger salaries, more judicial appointments for favored attorneys and more work for all other attorneys. These activities all provide positive utility as defined by Posner (1994).

McCormick and Tollison (1981) make the point that politicians are not different from anyone else.⁴⁹ Their actions in the political setting should obey the postulates of self-interest whether they are in a market or non-market setting. They write there is "no bifurcation of personality as between our political and private selves." Thus, one does not differentiate between public interest and private interest agendas, rather one seeks their own self-interest in both cases. This should hold true for judges as well as politicians.

⁴⁹ McCormick, Robert F. and Robert D. Tollison. Politicians, Legislation and the Economy: An Inquiry into the Interest-Group Theory of Government. Boston: Martinus Nijhoff, 1981, page 5.

It appears that the legal profession might have a dominant effect on the legislature and the operation of the judiciary, though this is a highly debatable point. McCormick and Tollison (1981) demonstrated the possibility of a disproportional number of lawyers in Congress who might migrate onto key judicial committees (Shepsle 1978). These committees then use their gate keeping powers to control legislation that affects the judiciary (Weingast and Moran, 1983). Finally, Posner (1994) and McCormick and Tollison (1981) theorize that judges follow their own self-interests that might include preserving their reputation and boosting their prestige among their fellow lawyers. I would note that one way to do this is to allow increased litigation activity.

Concerns about undue influence by the legislature and special interests on the judiciary is not without precedent. Before this century, most laws and courts aggressively defended individual property rights and personal wealth from rent-seeking. Recent court decisions indicate that this may no longer be the case. Rowley (1992) made a very strong case on the subject of the takings clause and economic property rights.⁵⁰ He stated that:

"It is my contention that . . . the Supreme Court failed repeatedly . . . to uphold the vision of the Founding Fathers and the wording of the Constitution by its deference to the legislative branch of government with respect to interpretations of the takings clause of the Fifth Amendment; and second, that ideologically motivated judges allowed their political agendas to subvert the Constitution in its intended protection of economic property rights . . ."

Rowley makes the point that the judicial system allowed itself to be controlled by Congress, the same Congress that is disproportionally controlled by lawyers. As

⁵⁰ Rowley, Charles K. "The Supreme Court and Takings Judgments: Constitutional Political Economy versus Public Choice." in N. Mercuro (Ed.) Taking Property and Just Compensations, 1992, page 79..

interpreters of the law and the Constitution, the courts effectively revised the meaning of the Constitution and weakened individual property rights.

Rent-Seeking Under Strict Liability

As I detail in Chapter 5, one major cause of the decline of general aviation appears to be liability costs brought on by increased litigation. Some modern economic and legal scholars have embraced the idea of strict liability and economic efficiency as a better way to guide our society, leveraging off the theories of Coase (1960).⁵¹ The Coase theorem deals with the exchange of resources to cover propositions about the exchange of legal entitlements. It states that in the absence of transaction costs, the initial allocation of legal entitlements does not matter from an efficiency perspective so long as entitlements can be freely exchanged. Thus, if a dispute arises between airport users and a large surrounding housing development over noise, the matter can be settled in a free market exchange with no transaction costs if rights to quiet are defined. In Coase's view, the two sides will simply auction the property rights until the property achieves its highest valued use. The importance of this theory is that it inspired legal scholars to consider economic analysis of the law.

Taking Coase a step further, Landes and Posner (1987) embraced product liability law on the grounds that strict liability creates incentives for optimal accident reduction.⁵² By making the manufacturer liable, incentives are created to the party who can most easily

⁵¹ Coase, Robert, "The Problem of Social Cost," Journal of Law and Economics, October, 1960, pp. 1-44.

⁵² Landes, William M. and Richard A. Posner. The Economic Structure of Tort Law, Harvard University Press, 1987, pp. 54-84.

improve safety through innovation. Hence, they believe it is "a system for bringing about an efficient allocation of resources to safety." Advocates of strict liability often use "innocent" plaintiffs being hurt by defective products as a normative justification for strict liability theory. Judge Traynor⁵³ noted that:

A manufacturer is strictly liable in tort when an article he places on the market, knowing that it is to be used without inspection for defects, proves to have a defect that causes injury to a human being The purpose of such liability is to insure that the costs of injuries resulting from defective products are borne by the manufacturers . . . rather than by the injured persons who are powerless to protect themselves.

This statement has some economic appeal as applied to the situation it purports to describe: a non-negligent user who comes across a defective product whose defects are hidden. Yet, this doesn't apply to the majority of general aviation aircraft accidents. In most accidents, subsequent investigations by expert investigators find the aircraft to be free from manufacturing or design defects and the pilot fully or partially negligent.⁵⁴ Posner (1987)⁵⁵ himself apparently has doubts about the real-world efficiency of this theory, since he wrote that:

"We make no attempt in this book to evaluate the overall efficiency of any field of tort law, which depends on the actual administration of the law by judges, juries, lawyers, insurance claim adjusters and others."

⁵³ Greenman v. Yuba Power Products, Inc., Supreme Court of California, In Bank, 1962.

⁵⁴ Martin, R. "General Aviation Manufacturing: An Industry under Siege," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 478-499.

⁵⁵ Landes, William and Richard Posner, The Economic Structure of Tort Law, 1987, page 27.

These theories deal with who should exercise the most care, yet another idea considers reducing the level of activity(Shavell, 1980).⁵⁶ Shavell (1980) claims that only if buyers correctly perceive risk, will the outcome be efficient. If they underestimate the risk, the price will be less than the socially correct price and too much will be purchased. Under strict liability, Shavell maintains that the outcome is efficient regardless of customer perceptions. Because manufacturers must pay the full social cost that includes accident losses, they will take proper care and sell the product at its "true" social cost. Customers facing this "correct" social price will buy the "correct" amount. The problem with Shavell's theory is that it fails to consider the tertiary costs of the legal process and emotive jury awards as well as moral hazard. In general aviation's case, high prices due to these costs reduced sales and flight activities. In Chapter 5, I make the case that this reduction resulted in more harm than good and failed to solve the underlying safety problems.

Shavell acknowledges that the private cost to the plaintiff of bringing lawsuits is smaller than the total social cost, which includes the defendants legal expenses as well.⁵⁷ He suggests this might result in excessive litigation. However, he counters that we must consider the social and private benefits. The private benefits are merely the proceeds to the plaintiff. The social benefits include the plaintiff's benefits as well as the benefits that might accrue to the public--an externality. This externality is the effect the lawsuits have on the actions of potential defendants. Thus, Shavell would acknowledge the losses to the general aviation industry are large. But, he would claim that the benefits of reduced accidents for the general public (resulting from safer aircraft or reduced sales) would be far greater.

⁵⁶ Shavell, Steven, "Strict Liability versus Negligence," 9 Journal of Legal Studies, 1980, page 4.

⁵⁷ Shavell, Steven. "The Social versus the Private Incentive to Bring Suit in a Costly Legal System," The Journal of Legal Studies, vol. XI (June 1982), pp. 333-340.

Shavell argues the efficiency of strict liability, but offers the following qualification:⁵⁸

"For a type of accident to be included in the scope of liability, it should have the fundamental characteristic that, given the circumstances under which it occurs, there must be a sufficiently high potential for reducing losses by taking more care."

In the case of general aviation, accidents could be reduced by better designs and better technology that would reduce risk under almost any circumstance--essentially producing an "idiot-proof" aircraft. If we restrict liability, this provides some degree of disincentive to invest in safety. Shavell acknowledges that strict liability does have the disadvantage of forcing manufacturers to pay for accidents that are not their fault--what he calls "crushing liability." He notes that this could be quite costly and force manufacturers to leave the market, even though their presence may be socially desirable. If one moves to a negligence standard, the scope of liability is restricted and the administrative costs associated with the use or threatened use of the courts are reduced. Assuming full information, this reduces the cost attributed to user negligence suits, but Shavell argues it also reduces the manufacturer's incentive to exercise due care. Thus, Shavell would argue that the total social benefit might drop by more than the reduction in social costs.

Charles Rowley (1990)⁵⁹ provides the best description of what effect strict liability has had on the law of tort and its practitioners:

"Finally we come to the law of tort, now arguably the greatest single threat to wealth accumulation confronting the U.S. Economy, a growing haven for those

⁵⁸ Shavell, Steven, "An Analysis of Causation and the Scope of Liability in the Law of Torts," Journal of Legal Studies, 1980, page 484.

⁵⁹ Rowley, Charles K., "The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique," Hamline Law Review, 12, Spring, 1989, pp. 355-83.

who have lost all vestige of the frontier spirit, all notion of being ultimately responsible for their own actions; and a notorious hunting-ground for contingent fee attorneys seeking litigation against deep-pocket defendants, however, far distant they may be from strict liability in the tort opportunity that has been defined. The long term cost to U.S. citizens, paid in the rising costs of services from the market process, plays no role in the private calculus of those who ambulance chase through the law of tort."

Though the current persistent decline in the general aviation industry has resulted in fewer accidents (not necessarily due to strict liability), does this compensate for the loss of over 100,000 jobs?⁶⁰ In 1983, general aviation pilots flew 35.2 million hours resulting in 556 fatal accidents killing 1069 people.⁶¹ By 1993, flight hours were down to 25 million hours, while fatal accidents dropped to 385 with 715 fatalities. The rate of fatalities per 100,000 hours dropped from 1.94 to 1.20 per 100,000 hours. As an example, if the average job was value at \$42,000⁶² each, this means a loss of \$4.2 billion to the industry, not including the losses to the supporting manufacturers and suppliers. If we place a value of \$300,000 per life, this equates to losses of only \$214.5 million.⁶³ The cost of litigation to the defendants (aircraft manufacturers) has been estimated at over \$500,000 per case--excluding any awards. Using 1993 and assuming lawsuits in each fatal accident, the defense bill would be over \$190 million. This does not even consider the other 1000+ non-fatal accidents that might precipitate a lawsuit. Obviously, one might choose different numbers and data for the calculation, but the point is that little analysis seems to have been

⁶⁰ Data provided by Cessna Aircraft Corporation Chairman Russ Meyers in testimony before Congress, Summer 1994.

⁶¹ Data from the Aircraft Owners and Pilots Association, Frederick, Maryland, February 1995, and from the Federal Aviation Administration, Statistics and Forecast Branch, Washington, D.C.

⁶² This is based on the mean 1990 earnings of males in the United States which was \$34,886 and a 20 percent add-on for fringe benefits, for a total of \$41,863 (rounded to \$42,000 for the example). Statistical Abstract of the United States 1992, Table 713.

⁶³ King and Smith, "Economic Loss and Compensation in Aviation Accidents," RAND Corporation, The Institute for Civil Justice, R-3551-ICJ, 1988.

done to support the current liability environment in terms of its underlying theoretical assumptions and real-world externalities. I should note that such calculations might offer positive evidence for or against theories. However, normative reasons often take precedence in court decisions. In the famous Ford Pinto wrongful death suit, evidence came out that Ford had actually done a cost-benefit analysis which implied it was cheaper to keep the existing gas tank design compared to the cost of the expected deaths.⁶⁴ The prosecutor in the criminal case and public opinion considered this type of economic analysis callous, if not criminal.

In the aggregate these strict liability theories may offer positive benefits, but their sectoral costs can be devastating. In the case of general aviation, the swing from a contributory negligence standard⁶⁵ toward strict liability has resulted in reduced safety innovations, firms leaving the industry and more dangerous product substitutes that avoid the liability costs.⁶⁶ For general aviation the impact of this legal reform has been dramatic--industry output has declined by almost 95 percent due in part to the increased liability costs that must be passed on through new aircraft prices. Though we may have a "safer" society, it might well be one with no innovation, no dramatic technical breakthroughs and significantly fewer jobs.⁶⁷ These are all factors that support Olson's decline of nation's

⁶⁴ Cooter, Robert and Thomas Ulen, Law and Economics, pp. 403-407, 1988. In this case, Ford determined that the cost of replacing a gas tank filler spout on existing cars (less than \$25) was more expensive than the expected statistical cost of paying for injury and death claims.

⁶⁵ A contributory negligence standard means that one allows a defense of contributory negligence, under which the plaintiffs negligence is a complete bar to her recovery. This makes it much harder to win a lawsuit and discourages litigation.

⁶⁶ Details of these observations are in Chapter 4.

⁶⁷ Though the general aviation workers lose their jobs and probably find others, it is not clear that the workers are better off at their new jobs. As history has shown in the larger northern cities, when major industries shut down, it may take many years before the local or regional economies recover.

theory. This was exactly what Rowley (1990)⁶⁸ predicted when he described the impact of the changes in tort law:

"Its principal consequence was the placing into market jeopardy or market demise a whole range of products and services subject to some risk to the client and reducing the availability of such commodities by imposing a significant tax upon consumers levied, without representation through the U.S. courts."

Chapter Summary

This chapter provided a background of public choice and law and economics concepts that I use in the remainder of this dissertation. Olson's work supports the idea that rent seeking and interest groups can do harm to the economy. In Chapters 3 and 5, I provide evidence of how this harm occurred in the piston segment of the general aviation industry. The literature on rent-seeking and interest groups provides the theoretical basis on how the interest groups organized themselves and what methods they used to obtain their wealth transfers. This insight from these theories are used in discussing the successful passage of the 1994 Aviation Tort Reform Bill in Chapter 6. Finally, the discussion of law and economics as focused on tort law is expanded in Chapter 4. The important insight is that interest groups using methods described in public choice theory controlled the key structures of the tort and legislative systems to increase wealth transfers to themselves. In Chapter 5, I show how this rent-seeking behavior prevents the tort system from achieving the efficiencies predicted by its supporters.

⁶⁸ Rowley, Charles K., *The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique*, Hamline Law Review, 12, Spring, 1989, pp. 355-83.

Chapter 3. The Crash of General Aviation

One way to view what happened to general aviation and its users is to visualize a series of aggregate rent-seeking cycles. When the industry was successful in its rent-seeking, rent-avoidance and rent-protection activities, it prospered. This took the form of favorable government subsidies, freedom from regulation and few low-cost substitutes. When it was the victim of rent-seeking or its rent-protection efforts failed, the industry declined. All of this occurred with the state of the general economy as a significant factor in the background. Thus, how well the industry prospered during booms or suffered during recessions was attenuated by its rent-seeking, rent-avoidance or rent-protection abilities. The industries ups and downs can then be viewed as the aggregate impact of the general economy and of general aviation specific rent-seeking effects.

With this as a background, I first provide a brief overview of the current state of the general aviation industry and a short description of the major costs of aircraft ownership. These costs are important since they represent the factors that can be affected by rent-seeking. Then I address several possible explanations for the market drop in single engine piston aircraft and show how public choice theory applies in several of those explanations.

As a starting point, there are several possible reasons for the current market slump and its persistence. Most of these would fit well into standard macroeconomic theories

describing market decline or business cycle theories.¹ I suggest the following factors contributed to the current problems:

- Oil shocks
- Decline in pilots
- Loss of airports and infrastructure
- Regulation changes
- Tax changes
- Maintenance of flight qualification
- Airline deregulation
- Low production rates
- Used aircraft market
- Liability costs

In the following sections and chapters I discuss each of these areas. For several of them, I explain how public choice theory and the influence of interest groups provide insight into the current recession for this industry. Though public choice theory by itself will not explain major economic changes, it does provide an explanation behind the "shocks" that many macroeconomic theories depend on.²

The Industry Decline

Looking at the general aviation market, Figures 2 and 3 show the last 35 years of total active general aviation aircraft and the production of new single engine aircraft.³ Single engine aircraft production cycled between 5000 and 15,000 aircraft per year over this period. The 1970 drop was attributed to the 1969-70 recession. This quickly rebounded in the early 1970s with the introduction of tax credits and an expansion of the GI Bill for flight training. There was a minor pause in the growth trend associated with the 1974-75

¹ Kydland, Finn and Prescott, Edward, "Time to Build and Aggregate Economic Fluctuations," *Econometrica*, November 1982, pp. 1345-1370.

² Real business cycle theories rely on real technical shocks in their models. See Kydland and Prescott (1982).

³ This data is from the FAA General Aviation Activity Survey for the relevant years looking at total general aviation aircraft. Active aircraft were defined as those that flew at least one hour per years. This data was obtained from surveys generated by the FAA and completed by registered owners of aircraft.

recession that followed the 1973 oil embargo. The market quickly recovered, showing strong growth until the peak years in 1977 and 1978.⁴ In the early 1980s, sales dropped and it appeared to be just another minor recession, similar to what the industry had experienced previously in the 1950s and late 1960s. By the late 1970s, aviation fuel was rapidly rising in price.⁵ There were changes in FAA regulations, a curtailment of the GI Bill benefits, as well as the effects of the Volcker recession on personal income. Some industry observers, such as the forecasters at the Federal Aviation Administration⁶ assumed the market would rebound in a few years as it had in the early 1970's.

As shown in Figure 2 and Figure 3, industry sales dropped substantially by the mid-1980s. Cessna Aircraft led the industry up through 1986, but elected to exit the market to concentrate on business jets. They left the industry due to the declining demand coupled with rising liability costs.⁷ The remaining firms filled the void left by Cessna, but still faced declining demand. To add to their problems, Congress repealed the aviation investment tax credit in 1986, increasing the real cost of new aircraft to businesses. During the Bush Administration, Congress enacted a 10-per cent luxury tax, which was later repealed. With deregulation of the airline industry in 1978⁸, airline traffic significantly increased. The airlines began intense competition offering low airfares and reducing their route structures to minimize costs. The growing airline lobby

⁴ The peak year for all general aviation types of aircraft was 1981. These small single engine aircraft sales fell first, followed by turboprops, and then jets.

⁵ Though gas prices had an effect on operating costs, new aircraft sales failed to drop quickly during the Arab-Israeli wars (1973) or during the initial years of the rapid rise in oil prices. Then, oil prices actually fell in real terms during the 1980s and 1990s, which had little impact of sales.

⁶ The Federal Aviation Administration produces a yearly publication, FAA Aviation Forecasts, which consistently predicted a simple linear increase in aviation activity during the 1980s and early 1990s.

⁷ The decline in demand and rising liability costs will be discussed in detail in Chapter 4.

⁸ An excellent public choice description on this deregulation effort is contained in Sam Peltzman's "The Economic Theory of Regulation after a Decade of Deregulation, Brookings Papers on Economic Activity, 1989, pp. 1-59.

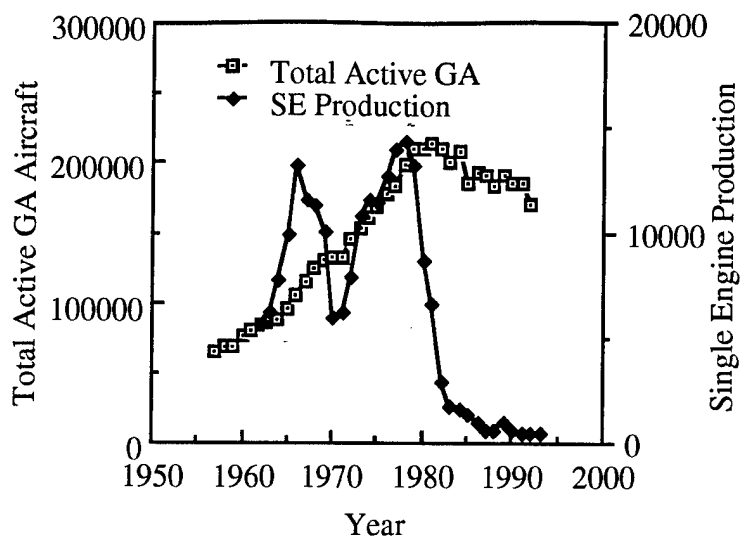


Figure 2. Total Active Aircraft and Single-Engine Aircraft Production

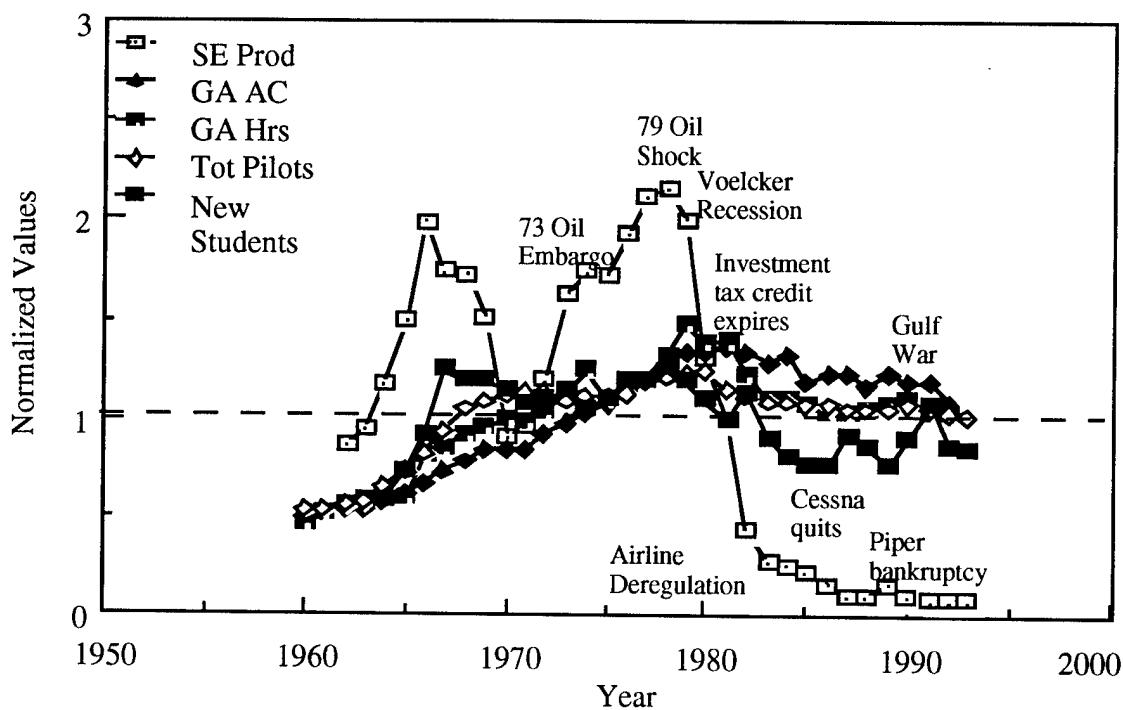


Figure 3. General Aviation Trends⁹

⁹ The data is normalized by dividing the category series by their mean values in order to make trend comparisons.

successfully gained regulations reducing access of light aircraft to many major airports under the guise of safety,¹⁰ though the effect was to increase airport availability to the airlines. The net result of all of this activity was a decline in the general aviation industry. The recent trend since the late 1980s has been a small growth in output of five or ten percent per year. As a percentage this sounds promising, but only amounts to 25-50 extra planes per years on a total market of 500-600 aircraft. Compared to the market peak of 15,000 aircraft per year, this represents a slow recovery.

Costs of Aircraft Ownership

Understanding why Americans have stopped buying new piston aircraft requires some knowledge of the product's costs. New single-engine aircraft sell for \$75,000 to over \$400,000 each. Pilots use aircraft for business, personal travel, recreation and flight training activities. Historically, new single-engine aircraft prices were in the same range as those of luxury sports cars, but current new prices now exceed that guideline. At the bottom of this price range are small two-seat versions that travel at 100 knots with a range of 300-400 nautical miles. At the top end of the general aviation market are aircraft that will carry six to eight passengers in relative luxury at speeds approaching 300 knots over a 1000 nautical mile distance.

¹⁰ The Federal Aviation Administration created new regulations restricting access to aircraft having certain navigation and communication equipment. They also set up extensive control zones involving hundreds of miles of airspace around major airports which restricted access to general aviation. The result was that light aircraft utility decreased in the metropolitan areas where the majority of financially able pilots lived. These moves to restrict access to commercial aircraft were strongly supported by the larger airports since they sold landing slots to the commercial airlines based on aircraft size, generating operating funds.

The aircraft's acquisition cost is not the only cost associated with aircraft ownership and operation. Insurance premiums are about the same as that of luxury sport cars--roughly \$1000-3000 per year with discounts for training and experience. Planes normally are not kept at home or at the place of business, so they must be hangared or parked at a convenient airport. This can cost from \$50 per month for a tie down spot outside on the ramp to several hundred dollars per month for a simple hangar rental. Pilots often pay landing fees at airports and fees for flight related services. These planes require extensive annual inspections as well as periodic inspections if used commercially. These inspections require that aircraft be maintained to safe operating standards, costing \$500-5000 or more annually¹¹. Pilots must invest a significant amount of time and money into new and recurrent flight training. Initial flight training cost \$2500-4500 while an instrument rating (needed to fly in all weather) costs another \$2500-4500. Biennial flight reviews with flight examiners require personal study time along with costs of \$100-350.¹² Additionally, each rating requires a minimum of flight time per quarter, a minimum number of landings or a minimum number of instrument procedures to remain current or else one has to fly with an instructor to become current. Pilots must also remain current on new flight regulations and procedures, maintain up-to-date manuals and maps (they change every few months), maintain their aircraft and provide for ordinary operating costs. Finally, pilots must undergo extensive physicals (\$75-250) every one to two years to maintain their flying privileges.

¹¹ Annual inspections are often more than just cursory inspections, rather they are detailed inspections for wear and tear as well as adherence to required maintenance directives from the Federal Aviation Administration. For many planes, these annual inspections are closer to annual renovations where major parts and sub-components are replaced and improvements are added to the aircraft.

¹² Current biennial flight review standards require a minimum of one hour ground review with the instructor and one hour in the aircraft. These reviews are meant to bring the pilot up to date on the most current flight regulations, procedures and operations that the respective pilot would likely encounter. Depending on the pilot's experience and recent flight time, the biennial flight review could take significantly longer than just two hours on the ground and in the air.

As an example of the acquisition and ownership costs, consider the purchase of a used four-place aircraft versus a new aircraft of the same make and model as described in Table 1. The new aircraft is a Piper Archer III (PA 28-181) while the used version is the 1973 Piper Challenger (PA 28-180). Both aircraft have similar capabilities, airframes and powerplants. The new aircraft would have updated avionics¹³ as well as the latest interior and exterior styling. Using data for winter 1995¹⁴, a new Archer costs \$180,000 while a recently overhauled 1973 Challenger costs \$42,000. Note that for the extra \$158,000 one essentially gets a functionally equivalent airplane with only slightly improved performance.

This simple example shows that an average pilot flying 120 hours per years would spend \$2342 per month to own and operate the new aircraft, almost three times the cost of a similar used aircraft. Even the used aircraft at \$821 per month is a relatively large undertaking for the average family. This still does not include the costs of training, commuting to the airport, medical examinations or support expenses such as maps, headsets and other equipment.

On the basis of these costs, one sees that flying either for pleasure or business is not an inexpensive or simple undertaking. One must invest substantial money into acquisition, operations and maintenance as well as valuable time into pilot training and flight currency requirements. Thus, the total cost of flying covers a variety of factors. Public choice theory enters the picture since each one of these costs can be affected by special interests attempting to gain a wealth transfer.

¹³ Avionics refers to the electronic equipment used for navigation and communication. This typically includes dual radios to communicate with air traffic control personnel, navigation radios that receive electronic signals that guide the pilot as well as some mode of direct navigation such GPS (global positioning satellite system). There may also be an intercom system and an autopilot.

¹⁴ Trade a Plane, Vol. 59, No 5, December 1995.

Table 1. Comparison of New Aircraft Costs to Comparable Used Aircraft Costs

Aircraft	Archer II	Challenger
Year	1995	1973
Purchase Price (1995)	\$180,000	\$42,000
sales tax and user tax (3%) ¹⁵	\$5400	\$1260
Closing costs, licenses, and fees	\$300	\$300
Total Time Airframe (TTAF)	20	4200
Total Time Since Major Overhaul	20	20
General Condition	New	Good
Avionics	Latest technology	20 year old technology
Monthly payment ¹⁶	\$1592	\$371
Insurance per month ¹⁷	\$250	\$65
Ramp fee per month ¹⁸	\$75	\$75
Annual Inspection (prorated monthly) ¹⁹	\$75	\$75
Property tax (1%, prorated monthly)	\$150	\$35
Gas/oil per hour	\$20/hr.	\$20/hr.
monthly costs to fly 10 hrs/month	\$2342	\$821
cost per hour	\$234/hr.	\$82/hr.
monthly costs to fly 5 hrs/month	\$2242	\$721
cost per hour	\$448/hr.	\$144/hr.
Cruise speed (knots)	128 kts.	122 kts.
Range	565 mi.	507 mi.
Payload	1160	1040

¹⁵ All fees, closing costs and license costs are based on Virginia and Maryland data. Most states charge either a sales tax or user fee on the initial purchase.

¹⁶ Payments based on late December 1995 interest rates charged by Green Tree Corporation. This assumed 20% down, annual 10.5% simple interest loan with a 15 year term. Other major aviation banks offered similar rates and terms during December 1995.

¹⁷ Insurance rates are a function of pilot qualifications, intended use of the aircraft, location where aircraft based and the initial aircraft value. At this time, insurance carriers were competing for customers, so rates varied by almost 50% between carriers. These rates were on the low end of the range.

¹⁸ This assumes parking the aircraft on a concrete ramp at Manassas Airport, Virginia.

¹⁹ This assume a \$900 annual inspection. Annual inspections can cost significantly more than this, especially on older aircraft, if major components need replacing. The new aircraft should be relatively cheap, while the 1973 Challenger would likely be more expensive. Though the initial capital costs of used aircraft are less than new, the maintenance costs of a \$42,000 aircraft are the same or higher than those of the \$180,000 aircraft.

Oil Prices

The Organization of Petroleum Exporting Countries increased the price of oil in the mid-1970s in what was one of the largest wealth transfers in history. Nominal aviation gas prices increased from 35 cents per gallon in the late 1960s to the current 1996 levels of \$2 per gallon (including taxes). These large price hikes affected flying by significantly raising the operational costs for the pilots. Aircraft manufacturing required many petroleum-based raw materials whose prices rose, further contributing to new aircraft price increases. Though fuel and petroleum based products rose during this period in the 1970s, today's real oil prices have actually dropped.

Figure 4 shows a comparison of aviation gasoline prices compared to total general aviation hours flown.²⁰ Just as light aircraft sales approached their peak in the mid to late 1970s, the oil embargo occurred and fuel prices tripled.²¹ One might hypothesize that the rise in aircraft prices and operational costs due to the rise in oil prices might directly affected flight activity. Yet, as Figure 4 indicates, flight hours continued to increase along with fuel prices. Even when the price of aviation fuel dropped, the flight hours dropped, so the two appear to move together over this twenty year period. Though nominal gas prices have remained high, the real price has fallen in recent years²². Since flying is often considered a normal good, as its real price fell, consumption should have risen.

²⁰ Fuels prices from Statistical Abstract of the United States 1992, US Department of Commerce, Economics and Statistics Administration, Bureau of the Census. General Aviation hours from Aerospace Industries 1993-1994 Facts and Figures.

²¹ These prices do not include taxes, which also rose in many states to recover lost revenues as sales dropped. Taxes typically add \$.50 to \$1.00 per gallon to the price. It should be noted that though gas prices rose dramatically, fuel costs initially represented a small fraction of total costs for general aviation operators

²² The drop in prices is direct result of OPEC's inability to maintain control of the cartel and free ridership.

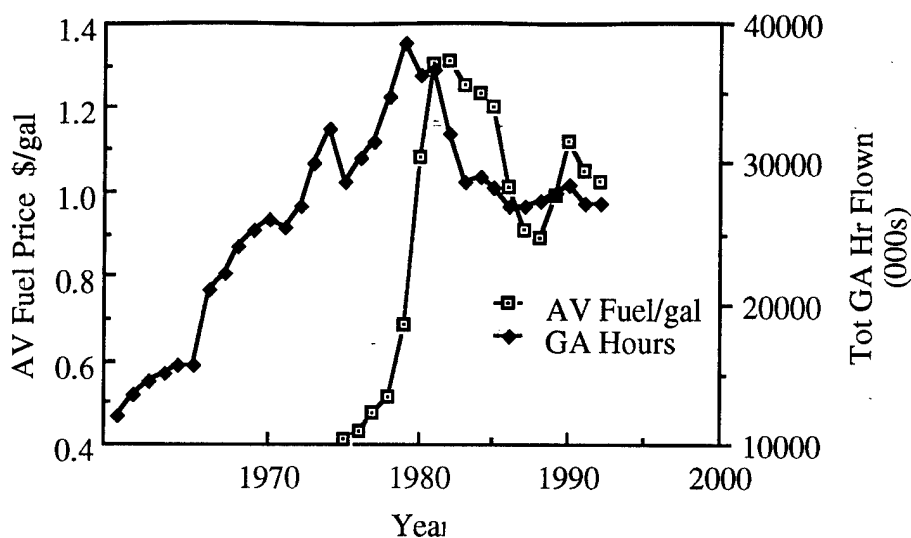


Figure 4. Aviation Fuel Prices (untaxed).

Figure 5 plots the FAA price indices that show operations and maintenance costs fell in real terms since 1980, while purchase costs for aircraft rose in real terms, exceeding the rise in inflation. Thus, rising oil prices did contribute to the rise in total aircraft costs, especially operations, but provide little insight into the continued decline of general aviation flight activity or new aircraft sales.

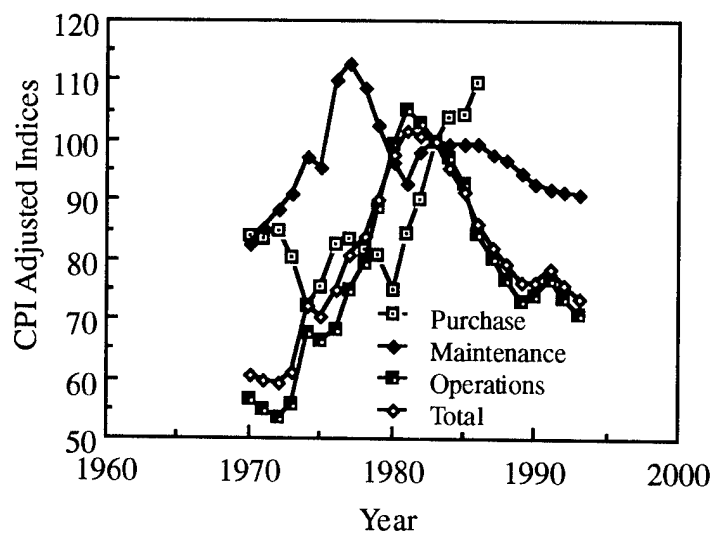


Figure 5. FAA CPI Adjusted Cost Indices.

A final issue related to oil availability was the passage of the Clean Air Act of 1991.²³ This law required the phase-out of all leaded-gasoline²⁴ by December 1995. As originally proposed, these regulation would have required possibly expensive modifications to many aircraft to enable them to operate on lead-free aviation fuel. However, the Environmental Protection Agency granted a waiver for aviation fuel allowing for the continued use of low-lead aviation gasoline.²⁵

Pilot Population

At the peak in the early 1980s, there were almost 850,000 total pilots. If the only problem was a rise in new aircraft prices, then one might expect new sales to drop, and flight hours to remain constant. Essentially, the existing pilots would continue to fly the fleet of used aircraft until this inventory of existing aircraft decreased from attrition. As the used inventory dropped, this would bid up used aircraft prices creating a new equilibrium gap between new and used aircraft prices. As shown in Figure 6, as new sales dropped (flow into the market decreases) and the existing fleet declines due to normal usage (stock of aircraft decreases) total hours flown should also decrease.

²³ FAA Aviation Forecasts, Fiscal Years 1993-2004, FAA-APO-93-1, February 1993.

²⁴ Most general aviation aircraft have engines that require leaded gasoline. Though most aircraft have switched to 100 octane low-lead gasoline, this new fuel would be banned under a no-lead ruling. Some aircraft engines are capable of using no-lead fuels, but the majority might encounter operational difficulties or require expensive modification or replacement.

²⁵ A more serious concern relates to the size of the market. Compared to automobile gasoline, aviation fuel is a very small market which may not provide sufficient revenues to maintain a competitive market.

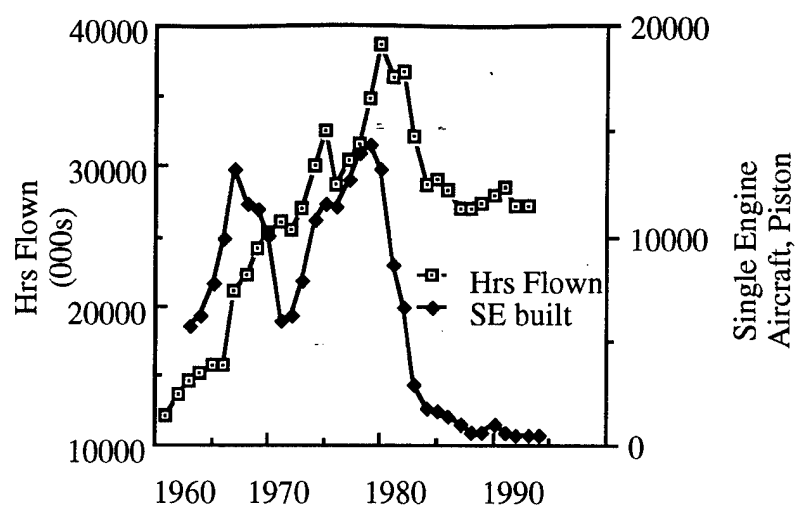


Figure 6. GA Hours Flown and Single Engine Piston Aircraft Production Time Series.

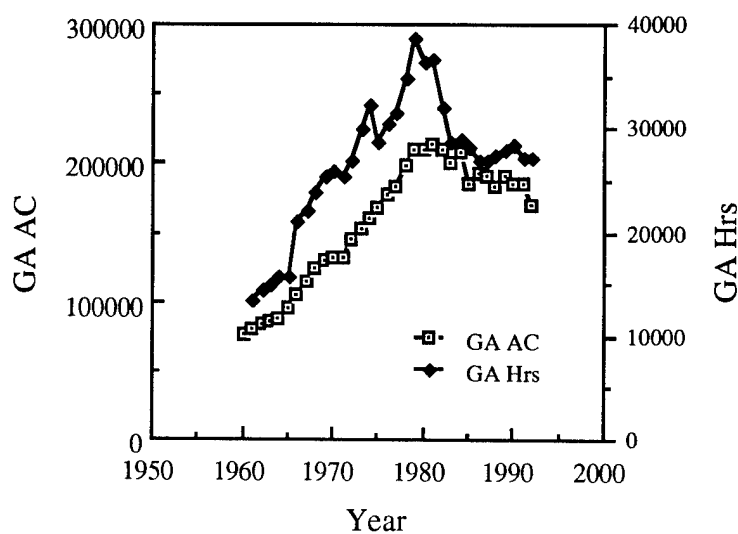


Figure 7. GA Hours Flown and Total GA Aircraft

Figure 7 shows that the general aviation hours flown and total general aviation active aircraft move together. This confirms that as the fleet size drops one sees a corresponding drop in flight hours.

When we add the number of active pilots to the time series in Figure 8, we notice a corresponding drop in the number of pilots. This shows that part of the industry slump was due to a reduction in the number of pilots who would normally operate the fleet of new and used aircraft. The drop in pilots directly reduces the usage rate of the existing aircraft, lowering the attrition rate of the used aircraft fleet. As the used fleet's life expectancy increases, this reduces the demand for new aircraft.

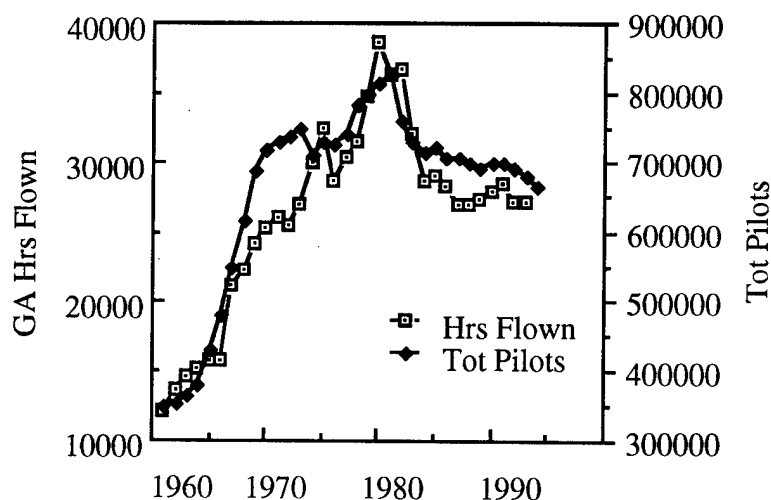


Figure 8. General Aviation Hours Flown and Total Pilots per year.

Whether pilots buy a new aircraft outright or buy them "by the hour" through rentals or flying clubs, their activity level ultimately determines the demand for new, replacement aircraft (derived demand for flight services). Figure 9 shows the trend of total pilots and new students.²⁶ Since the peak years of 1978-80, the total number of pilots declined and more significantly, the number of new student pilots fell by over half. Yearly flight hours positively correlate with active pilots, so the decline in new pilots indicates a decline of future flight hours and less demand for new aircraft.

²⁶ FAA Statistical Handbook of Aviation, FAA APO-94-5. New students are classified as those who initially got their student certificate that year. Total student pilots for any given year are higher since many student take several years to finish.

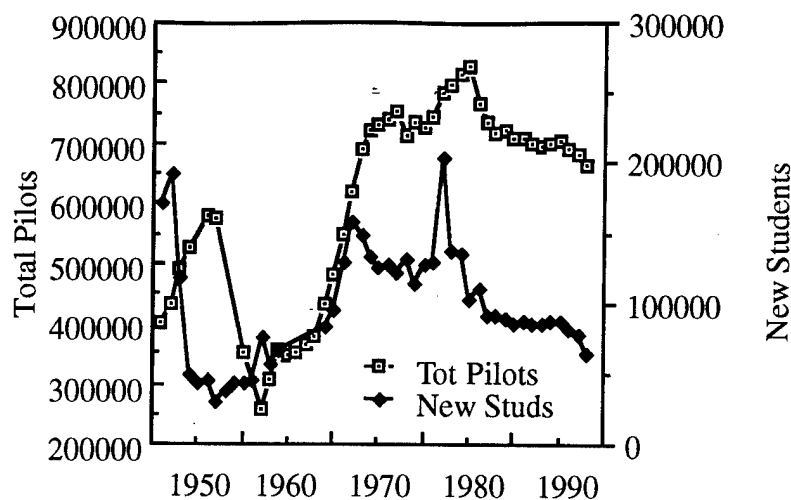


Figure 9. Total Pilots and New Students per year.

A significant factor in pilot supply relates to military training of pilots. During WWII, thousands of pilots were trained and many entered civilian flying after the war. These pilots had flown thousands of hours in the military, so had developed a "taste" (Stigler and Becker, 1977) for flying as well as an appreciation for its benefits. According to Stigler and Becker²⁷, if we substitute flying for music:

The consumption of (flying) rises with exposure not because tastes shift in favor of (flying), but because its shadow prices falls as skill and experience in the appreciation of (flying) are acquired with exposure . . . The marginal utility of time allocated to (flying) is increased by an increase in the stock of (flying) capital.

At the end of World War II, thousands of military pilots and aviation support personnel began flying privately due to a Stigler and Becker type of exposure to aviation. These

²⁷ Stigler, George J. and Gary S. Becker, "De Gustibus Non Est Disputandum," American Economic Review, March 1977, pp. 76-90.

airmen had been exposed to flying at government expense, so had built up an appreciation and understanding of what flying could offer. The GI bill was the result of veterans lobbying for benefits to gain better careers after investing a significant part of their lives in defense of their country.²⁸ To the veterans, the GI Bill was a direct subsidy to support education and retraining. Flight training was included since many veterans desired to move into the growing commercial aviation industry that began to prosper after the war.

As mentioned above, the drop in the number of active pilots matches the drop in sales of new aircraft. The question is why are fewer people flying or learning to fly? Stigler and Becker (1977) address this issue. They note that when a temporary change occurs (such as an economic downturn or price fluctuation) people will not normally disinvest their human capital embodied in knowledge or skills. This was the situation seen in previous recessions where pilots continued to fly and new students still found flying attractive. This leads to rather inelastic response when prices suddenly rise. However, if the changes are seen to be permanent or long-term, then we might see a disinvestment in human capital as explained by Stigler and Becker (1977). Even though the shadow price of flight activities may be relatively low due to previous consumption, a rapid rise in flight activities may make the cost of flying high compared to other activities. In the case of flying, as its prices rose (permanently) consumers substituted other normal goods. Stigler notes that the young who have a smaller investment will leave first. The old, due to their larger investment, will be less likely to change since they have less time to reinvest in new activities. This matches the data shown in Figure 10 and Table 2 where the average pilot age is increasing and the distribution of pilots is shifting toward the older age groups.

²⁸ It is also probable that the GI Bill served as a transition device that kept thousands of ex-servicemen out of the labor market immediately following the war and lessened the expected high levels of unemployment as the country shifted back to a peace time economy. Comment by Dr. Gerald McDougall, Dean of the Harrison College of Business, Southeast Missouri State University.

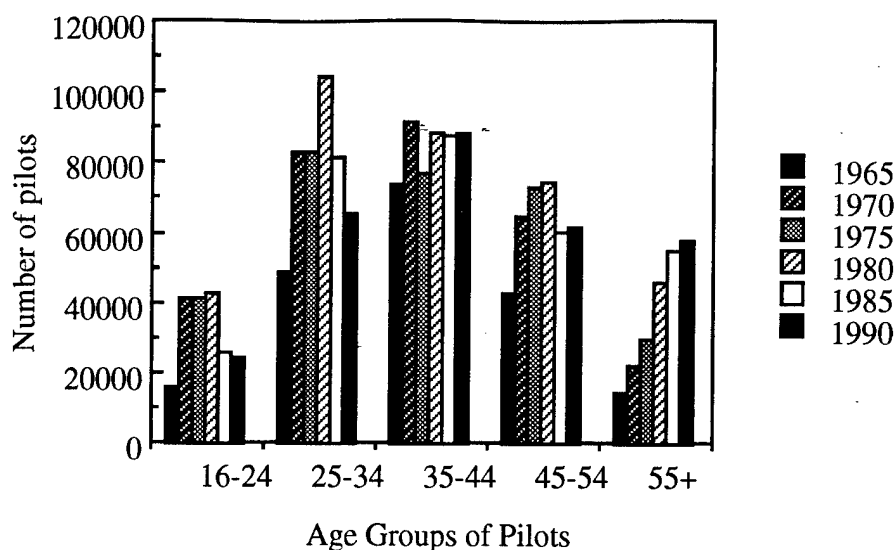


Figure 10. Age Distribution of Pilots.

Note that the oldest age grouping (55+ years) has shown a steady growth while the rest followed the general trend of the industry. This is the demographic phenomena of the large number of pilots that entered flying during the 1960-70s and the aging of that group.

Table 2. Average Age of Pilots²⁹

Year	1960	1970	1975	1980	1985	1990
Age	39.6	38.3	39.0	39.5	41.3	42.4

Since flying as a discretionary activity appears to be a normal good, income affects the quantity of flying consumed. Figure 11 shows the changes in total general aviation flight hours as median income changed. Before 1980, total general aviation hours flown matched the general trend of median income. However, in 1982 as personal income began to rise, flight hours failed to recover and continued its downward trend, though at a slower pace. The data on student pilots in Figure 12 shows a similar relationship. The rise and

²⁹ Averages based on weighted means from interval data derived from yearly FAA Statistical Handbooks of Aviation for respective years, so will not exactly match actual population means.

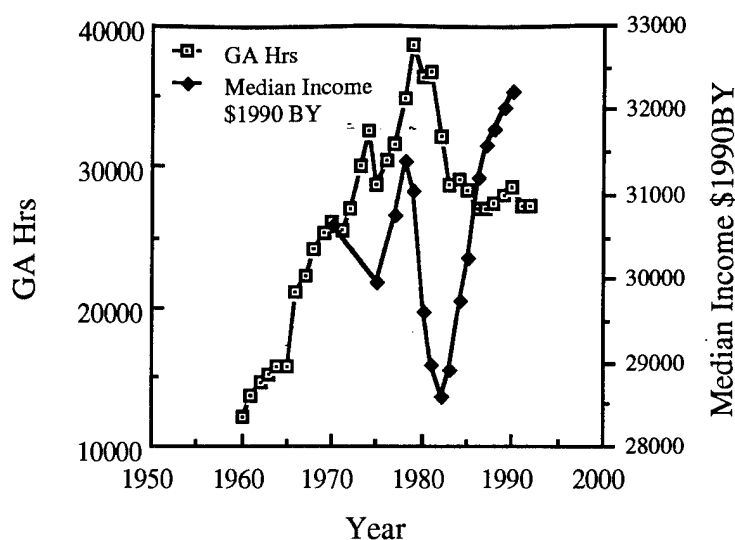


Figure 11. General Aviation Flight Hours Compared to Changes in Median Income.

fall of student pilots matches that of median income 1981. Coming out of the recession, median income began to rise, but student pilots numbers continued a slow decline.

Figure 13 shows the number of new students and new pilots changes with GI Bill flight benefits. The GI Bill was a direct subsidy that paid for flight training which generated general aviation flight hours. During the mid-1970s, not only did the GI Bill funding peak, but so did the benefits to the students. At this time, the program subsidized 90 percent³⁰ of the cost of obtaining advanced pilot licenses and ratings.³¹ The increased number of students eventually translated into increased purchases of training aircraft of all types, which translated into a rise in demand for new aircraft.³² Eventually, the GI Bill

³⁰ It is quite likely that many flight schools adjusted their rates and "ignored" the student's 10% contribution in order to gain new students. Hence, this explains the appeal to students of flight schools during this period.

³¹ Under this program, pilots had to have either a private pilots license (40-50 hours of flight time) or have equivalent military ratings.

³² As evidence of this demand for training aircraft, the entire production of Piper's Tomahawk (2484 aircraft) and Beechcraft's Skipper (312 aircraft) took place from 1978-1982 during this period. Cessna produced over 20,000 Cessna 150s and 152s trainers from 1966 to 1982 with peak years in the mid to late 1970s..

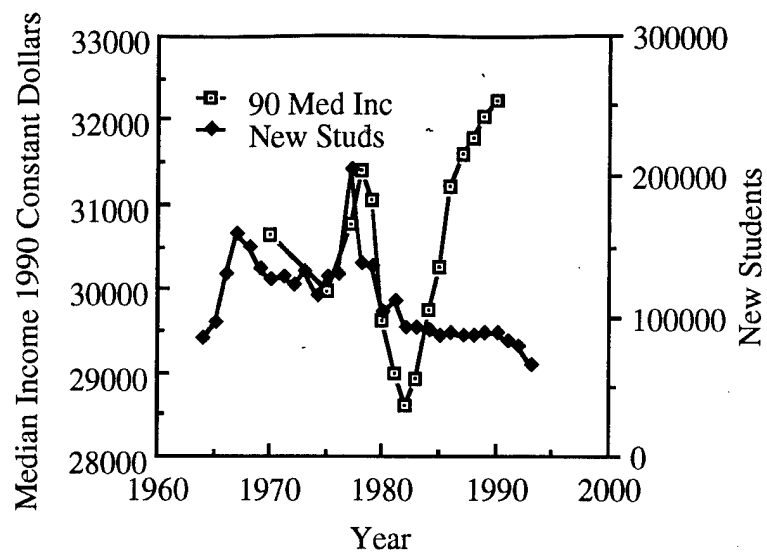


Figure 12. New Student Pilots vs. Median Income.

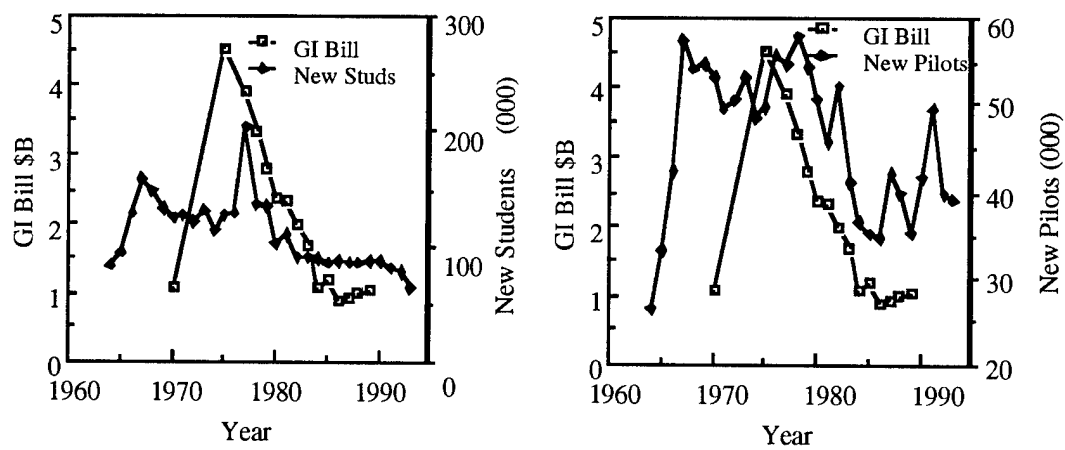


Figure 13. GI Bill Benefits vs. New Student and New Pilots.

was changed (flight benefits were reduce or eliminated) while the number of eligible veterans also declined due to the military drawdown.³³ As this subsidy disappeared along with a drop in median income, we see an accompanying drop in new students and new pilots. This evidence supports the theory that part of the increased aircraft sales and flight activity in the late 1970s was due to successful rent-seeking by the general aviation industry and its pilots to gain a subsidy for flight training through the GI Bill. Unfortunately for them, the failure in their rent-protection efforts in the early 1980s to maintain the GI Bill coincided with the Volcker recession and the second large oil shock. In 1991, the GI Bill began a pilot program to offer flight training benefits, only this time at 60% reimbursement. This has not had the same effect as the previous program. This is due in part to the higher student contribution, the smaller pool of eligible veterans and the smaller GI Bill benefit package that each member receives today. Finally, many veterans pursue this education to become commercial pilots, yet today the market for commercial pilots is saturated. Most airlines have hundreds of applications for each opening and salaries are quite low.³⁴

³³ A veteran's GI Bill benefits are based on when one enlists and the program that was in effect on that date. The benefits have a dollar limit as well as a time limit. Thus, as students used up their benefits and as time passed, the number eligible (based on the peak years of Vietnam) declined as the 1980s began.

³⁴ At this time (1996), airline hiring is rather flat--only a few hundred per year. The pool of potential applicants contains hundreds of furloughed airline pilots waiting to be recalled, thousands of highly experienced military pilots as well as young pilots trying to break in to the industry. Starting salaries for new pilots are only in the \$20-25,000 range. This is quite low compared to the estimated investment of \$15-25,000 needed to obtain an airline transport pilot rating (needed to fly commercial airlines) and the current low probability of being hired.

General Aviation Airports and Airspace

This section considers how the loss of airports and their support facilities affects the utility and costs of flying. There has been a decline in the number of public use airports, especially near larger cities that has increased the cost of flying and contributed to the decline in flight activities. I take a public choice view and offer the partial explanation that these airport closings are the result of successful rent-seeking on the part of interest groups who feel they have a better use for the airport property and facilities. In a later section, I address the impact of airline deregulation and how it has affected airports and other supporting infrastructure needed for flying.

Figure 14 shows that between 1969 and 1992, total airports increased 31 percent from 9909 to 13,016.³⁵ However, the number open to the general public declined by 22 percent from 6710 to 5236. Most new airports being built are private facilities, now representing

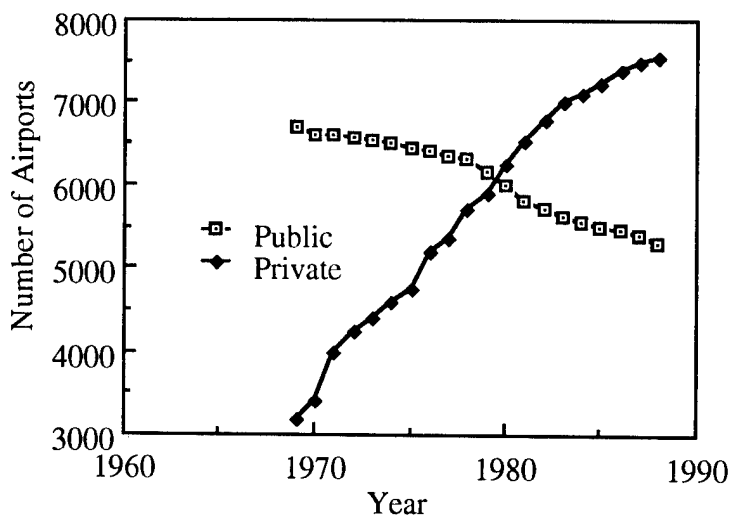


Figure 14. Number of Public and Private Airports in the United States

³⁵ 1994 AOPA Fact Sheet.

almost 60 percent of the nation's total number. Many of these new private airports are expensive suburban housing developments surrounding the private runway. Each house has a hangar with easy access to the runway or main taxiways. Pilots who can not afford this type of facility or choose to live elsewhere must use the remaining public facilities.

As the economy grows, the satellite public use airports located around the major U.S. cities become prime targets for other types of land use. Land developers and governments see the large, cleared land tracts as prime spots for new shopping or residential developments that produce significant tax revenues. Though the general aviation airport provides significant benefits to the community,³⁶ the local citizens often focus on the noise and perceived safety hazards of aircraft flying over their houses and businesses. The new neighbors attempt to restrain airport activity to defend or enhance their new property rights. In this case, special interest groups attempt to persuade local and federal governments to ban or limit aviation activities.

The concerns for safety around general aviation airports are generally unwarranted. FAA data, shown in Figure 15, shows total general aviation building and residential accidents.³⁷ In the worst year for the entire country, only ten persons died as a result of general aviation accidents near or on airports.³⁸ As a comparison, in 1985, 7750 pedestrians were killed by motorists, 1100 died in boating accidents, 900 died while riding

³⁶ In the study, "The Economic Impact of Civil Aviation on the US Economy" prepared by Wilbur Smith and Associates, the researchers determined that general aviation's annual economic impact exceeds \$42 billion per year. These benefits come in the form of transportation of goods and personnel, wages of all supporting personnel, and the multiplier effects with other related industries. A similar study focusing on Virginia showed that aviation businesses at Virginia's 80 public-use airports contributed \$105 million in local taxes, has a multiplier effect of over two for every dollar spent by aviation consumers, provided average wages 40 percent higher than the average Virginia salary for almost 6000 jobs, and that travelers arriving by air at these facilities spent an average of about \$70 per day.

³⁷ Data does not include accidents involving commercial airlines accidents, which are not general aviation.

³⁸ As described, this does not include accidents involving commercial aircraft operating out of major airports.

bicycles, and thousands died or were injured in residential car accidents. In terms of the noise complaints, typical propeller driven aircraft produce 55-65 dba, while light jets will produce 65-75 dba. For comparison, average street traffic is 85 dba and heavy trucks are 90 dba. Opponents often complain about the activity level at the airport. At most small suburban airports, the number of daily take-offs and landings are a few dozen. There are exceptions, such as Van Nuys Airport in California where in 1992 there were 519,313 general aviation operations (defined as a take-off or landing by a single aircraft). However, most airports are relatively quiet and unused.³⁹ This lack of activity becomes a weakness for the airport supporters, since the low flight operations generate fewer taxes and income for the community.

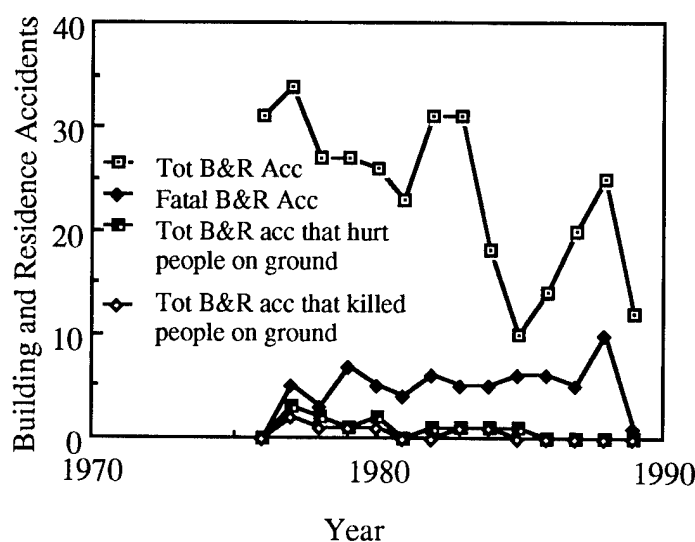


Figure 15. Summary of Crashes into Buildings and Homes near Airports.

³⁹ In 1992 there were 36,681,000 take-offs and landings reported at airports having FAA towers. If we divide that by the number of general aviation aircraft registered that year (245,000), this means each aircraft made one take-off or landing every two days. Even if we assume only half of those registered operated at those airports, this means one take-off or landing each day for each aircraft stationed at the airport. Using the fact of 245,000 aircraft distributed at 13,000 airports this produces an average of 19 takeoffs or landings each day at each airport. For most surrounding suburbs, this is insignificant compared to the amount of automobile and truck traffic per day. Data from General Aviation Activity Survey, FAA-APO-93-10.

The majority of airports were originally built in open areas away from housing. These locations provided a safety buffer for local residents and gave pilots the opportunity to land in the uninhabited areas adjoining the airport in an emergency. Before the large expansion of suburban housing in the 1960s, most new housing developers avoided airports due the known noise and air traffic. Early airports owned buffer zones, but as the airports grew (more planes and runways), they quickly expanded to the edges of their property. The new neighbors soon complained about the noise and perceived safety concerns while developers bid up the price of the property surrounding the airport. In typical cases, the Federal Aviation Administration (reacting to complaints or lobbying) restricts operations (noise abatement) and flight activities while limiting the number of pilots and aircraft that may use the field. In the extreme case, the airport may close. Demsetz⁴⁰ claims that property rights developed to internalize externalities when the gains of internalization became larger than the cost of internalization. In this case, pressure from the surrounding developments and land developers forced the airport owners and users to consider their impact on the surrounding communities in an attempt to alleviate efforts to shut down the airports.

Coase (1960) takes a slightly different view of this situation.⁴¹ He states the economic problem is how to maximize the value of production of both parties. This theory requires that one disregard previous assignments of rights and determine how total production (or here, utility) could be maximized based on the new circumstances. In its simplest form, the Coase theorem deals with the exchange of resources to cover propositions about the exchange of legal entitlements. The theorem states that in the absence of transaction costs,

⁴⁰ "Toward a Theory of Property Rights", Harold Demsetz, University of Chicago, American Economic Review, 1967, pp. 23-36.

⁴¹ Coase, Robert, "The Problem of Social Cost," Journal of Law and Economics, October, 1960, pp. 1-44.

the initial allocation of legal entitlements does not matter from an efficiency perspective so long as they can be freely exchanged. Thus, if a dispute arises between airport users and a large surrounding housing development, the matter can be settled in a free market exchange (no transaction costs). However, it is questionable if the real transaction costs are really low or non-existent as assumed by Coase.

In these situations where there is a dispute between the airport users and the surrounding developments, the pilots might have to reduce their flight activities so that surrounding communities can gain maximum utility from their homes next to the airport. An obvious question is why the airport and its users do not claim total rights if they were there first, under the doctrine of lost grant?⁴² Most of the offending airports existed for many years before residential encroachment, so the newcomers must have been aware of the potential nuisance. Coase cites the case of *Sturges vs. Bridgeman*,⁴³ a case similar to aviation's with the same legal outcome. In this case a doctor sets up practice next to a confectionery that has existed for more than 60 years. The doctor built an examining room only to discover that the confectionery machinery caused strong vibrations that disrupted his ability to work. The doctor sued claiming the confectionery created a nuisance. The court decided for the doctor. The legal standard was that though the confectionery had operated in this manner previously, its activities were not a nuisance until the doctor attempted to exercise his property rights. In the case of airports, though the noise and low flying aircraft existed for years, they were not a nuisance until developers built houses on the airport boundary. The courts and the FAA have generally followed Demsetz's theory

⁴² According to Coase, the doctrine of lost grant states that if a legal right is proved to have existed and been exercised for a number of years, the law ought to presume that it had a legal origin.

⁴³ II Ch D 852, 1879, referenced in "The Problem of Social Cost", by Ronald Coase, University of Virginia, *The Journal of Law and Economics*, Volume III, October, 1960.

and forced a compromise to maximize total utility with both sides sharing in the costs (reduced activity with some noise and over-flights of residential areas).

A different explanation comes from public choice literature and George Stigler (1971).⁴⁴ This literature states that interest groups will acquire regulations or regulatory rulings that will benefit themselves often at the expense of others. Land developers in the late 1970s and early 1980s realized large profits were available to those who could acquire cheap land near major urban areas. Airports were a natural choice since they generally occupied flat, cleared tracts of land relatively near the cities. In addition, conversion of the airport sites to commercial or residential developments would increase tax revenues to the local governments. With the arrival of airline deregulation, many of these airports lost their Federal government subsidies that had made them profitable. Without this funding, they were a burden on cash-starved county and city governments.

Though the land was highly valued by the aviation community, the airport users were a relatively small segment of the population that was unorganized and uninformed. Most land developers were already organized, well-informed on land-use issues, and had sufficient funds to attract interested politicians. Many of the new housing developments had homeowners associations in existence that could cheaply lobby and take political action. According to Olson,⁴⁵ in a world where information and transaction costs matter, some groups will be able to organize and acquire information more cheaply than others. These groups will have an advantage over those with higher costs. That is the case of the land developers and businessmen. On the local level, these developers and businessmen

⁴⁴ Stigler, George, "The Theory of Economic Regulation," The Bell Journal of Economics and Management Systems, Vol. 2, Spring 1971, pp. 3-6.

⁴⁵ Olson, Mancur, The Logic of Collective Action, Harvard University Press, 1965, pp. 159-167.

were quite adept at the regulatory process and at attracting legislative support. At a national level, wealthy developers also found sympathetic supporters in the Congress. In contrast, the users and owners of the airports were generally unorganized and ill-prepared to defend against these attacks. As I discuss in Chapter 6, it was not until the late 1980's that the aviation community was able to get organized in the form of the Aircraft Owners and Pilots Association and gain political clout.

To the new or existing pilot, this rent-seeking against aviation restricts the utility of flying.⁴⁶ If the airport survives, noise restrictions limit the types and numbers of aircraft allowed, the times of operation, the types of activities (no touch and go's⁴⁷, for instance), and require certain take-off and landing procedures. The net effect is that it makes flying more difficult, less convenient, and more costly. Restrictions on the number of aircraft allowed create a shortage of places to store an airplane, thus raising the cost. Airport usage restrictions often require training be accomplished at another airport (practice landings and takeoffs for instance) raising the cost of training. If there is a large metropolitan airport in the area, the FAA might require extra equipment (Mode C transponder⁴⁸), higher pilot qualifications⁴⁹ and limited flight activity in the area.

⁴⁶ The AOPA has an entire division that actively investigates issues involving airport usage and availability. This group has developed a rather detailed information packet entitled "Airports: Then and Now" which is a guide to obtaining community support for local airports. This forty page information book details how to organize a grass roots campaign to deter other interest groups seeking to close or curtail airport operations. The book provides data on how the decline in airport facilities have hurt the average pilot as well as the benefits that these airports provide to the local communities.

⁴⁷ A pilot performs a touch and go when he lands and immediately takes off again without stopping, leaving the runway and taxiing back to the beginning of the runway. They are usually performed by student pilots practicing their take-offs and landings.

⁴⁸ Mode C transponders are electronic devices that send a signal to FAA radars showing the aircraft's position, altitude, and identification code. Light aircraft are often difficult to detect at lower altitudes, so transponders solve this problem. Transponders cost several thousand dollars.

⁴⁹ The FAA can restrict flight through congested areas to only those possessing a private pilot license and Mode C transponders. Additionally, they can deny pilots access to fly through these areas, causing pilots to fly around these areas.

Finally, if the local airport shuts down, then the pilot has to travel farther to the nearest remaining airport.⁵⁰ This may be an hour or more away from home, raising the cost of flying by the value of one's time and the cost of driving this distance. If we consider this as a simple labor-leisure trade-off, the price of this type of leisure increases. Gary Becker (1965)⁵¹ raised this issue of the value of one's leisure time in his discussion of the allocation of time by individuals. He states that the full costs of activities must consider the foregone value of the time required to accomplish the activity. The cost of flying is not simply the out of pocket expenses, but also the opportunity cost of one's time. A typical businessman who actively engages in flying in a suburban area spends dozens if not hundreds of hours commuting to the airport and preparing himself and his aircraft for flight. This non-flying time may be significant compared to the actual flight time. Thus, as potential aircraft owners increase their income, this also increases the cost of their leisure time. While the relative cost of the aircraft drops (relative to their total income), the total cost of flying rises. Unless personal flying significantly enhances productivity (such as reducing travel time), the rising cost of flying makes it vulnerable to less costly substitutes. This rise in the price of flying is exactly what Stigler and Becker (1977) described. As the price rises, new flyers will be deterred by the high cost and older pilots will be less likely to leave. However, they too will reduce consumption as the price rises.

As an example of decline in airports, Prince William County (located 18 miles south of Washington DC) had six airports in 1970, two of which were open to the general public. By 1990, this was down to one public use airport and one private landing strip. Prince

⁵⁰ Northern Virginia is a typical example. As land values sky-rocketed in the mid-1980s, the last small airport in Northern Virginia at Woodbridge was sold and turned into a strip-mall. The displaced aircraft had to either go to Fredericksburg, Virginia (30 miles away), Leesburg Virginia (35 miles away) or to Manassas Virginia, which was significantly more expensive to operate from.

⁵¹ Becker, Gary, "A Theory of the Allocation of Time," *Economic Journal* 75, No. 299, September, 1965, pp. 89-114.

William's population grew 94 percent in the period with its population density rising from 328 to 637 people per square mile. Total housing units grew from 29,885 to 74,759--a 150 percent increase in housing. The number of businesses grew from 1622 to 3625 while payrolls rose from \$199M to \$807M. The net change is that land value rapidly increased as the demand for land rose.

In Virginia⁵², from 1970 to 1990, the number of public use airport dropped from over 100 to 67. Many of those that closed were short sod strips that produced minimal economic gains to the counties. Others strips became private airfields to meet insurance and cost considerations. Private airfields allow limited access, therefore internalizing and limiting the external costs to the community.⁵³ Several airports, like Woodbridge, were medium-sized public use airfields whose closure affected a large number of pilots in the local area.⁵⁴ In this case, the county was faced with an expanding population growth and a need to provide costly infrastructure. The private airport occupied a large section of land that was now in a prime location. Groups representing developers and surrounding land owners lobbied the county government to get the entire area rezoned for residential and commercial use, which also changed the tax rates.⁵⁵ Faced with high taxes and relatively small revenues, the owner sold the airport. This trend exists throughout the United States, resulting in a decline in the number of available airfields. Now the county receives taxes from the new strip mall, the developers realized profits and the new homeowners enjoy housing closer to their jobs. For these groups, the rent-seeking was successful and some received a significant wealth transfer. For the general aviation community, their rent

⁵² AOPA Directories, 1970,1980,1990,1994.

⁵³ By selling these airfields, the local governments are free from liability and insurance considerations, maintenance costs and the rising costs of meeting increased government regulations.

⁵⁴ Haines, Thomas, "America's Airports: The Waiting Game," AOPA Pilot, August, 1989.

⁵⁵ In this case, the government was not just the middleman for the wealth transfer, but a recipient of the new tax revenues needed to fund other government expenditures.

protection activities failed. The pilots lost their flying base and the local airport workers lost their jobs in order for the others to gain.⁵⁶

As the number of public use airports drop along with general aviation hours, the services available at airports has dropped. Fixed Based Operators (FBOs) normally provide fuel, maintenance, flight instruction, aircraft sales, and aircraft rentals. Recent data⁵⁷ shows that FBOs at public use airports have dropped from 3729 in 1981 to only 1840 in 1991.⁵⁸ For the pilot community this means fewer places to learn to fly, to rent aircraft or to go to for maintenance. This drives up the cost of these services as well as the search time to find the best sources. This decrease in FBOs correlates positively with the decrease in students, which correlates with the decrease in flight hours and aircraft sales.

Changes in Government Regulations and Taxes

In Chapter 2, I discussed how interest groups attempt to gain wealth transfers through a variety of actions. For general aviation these actions include tax laws, subsidies, restrictions to entry and monopoly enhancing rules. Several beneficial taxes and wealth transfer programs previously existed to aid general aviation. The first, veteran's flight

⁵⁶ In this discussion of airport closings, I am focusing on the rent-seeking activities among the interest groups. I realize that the closing of the airports may result in a more efficient use of the resources for the majority of citizens in the area. The key point, however, is that in many instances the impetus that causes the move toward this more efficient state is rent-seeking. The rent-seeking represents the transaction costs that Coase ignores.

⁵⁷ "Future of Training in Aviation", Dr. David NewMyer, Southern Illinois University, presentation to 1992 FAA General Aviation Forecast Conference. Data derived from AOPA Aviation Directories.

⁵⁸ As a comparison, in 1981 these 3729 FBOs were located at 5880 public use airports. In 1991 the 1840 FBOs were at 4610 public use airports, so the ratio of FBOs/airports dropped from 63 percent to only 40 percent.

benefits, has already discussed. This was quite popular during the Vietnam era but was phased out in the 1980s. Congress revived veteran flight training benefits in the early 1990s, but limited the scope and applicability compared to the Vietnam-era GI bill and its benefits.

The second major transfer was the tax laws gained by industry lobbyists. These tax benefits took effect in the 1970s, but were gradually phased out in the 1980s. These tax laws allowed individuals or businesses purchasing aircraft targeted for business use to receive a tax credit and rapid depreciation.⁵⁹ This substantially lowered the acquisition costs of new aircraft. Under this version of the tax code, business operators of leased piston engine aircraft received a tax credit the first year of the acquisition and were allowed to rapidly depreciate the asset. Adding to the incentives during this period, the Internal Revenue Service allowed owners of these passive investments⁶⁰ to deduct losses from their regular active incomes. This means that an individual could buy the aircraft, receive the tax credit, rapidly depreciate the aircraft realize a loss and then subtract this loss from his normal (active) income. After 1986, the Internal Revenue Service disallowed the deduction of passive losses from active income, the rapid depreciation and the tax credit. Most of these business aircraft were leased to training schools or aero clubs. This provided a supply of new aircraft to the flight schools which in turn may have attracted more students. This also benefited many owners⁶¹ since they not only owned their own aircraft, but gained the tax benefits of using it for business purposes.

⁵⁹ These tax credits and rapid depreciation allowances served as direct subsidies to this industry and its users, in addition to other industries who also shared in the same type of benefits.

⁶⁰ Under Internal Revenue Service rules, income is passive if one does not exercise active management of the asset. When one buys an aircraft and turns it over to a leasing agent for management, this becomes a passive investment.

⁶¹ Aircraft are still leased to flight schools today and similar benefits still accrue to the owners. However, they don't receive the tax credit nor do they receive tax benefits of rapid depreciation. Many owners of leased general aviation aircraft today are in the business to offset their personal flying costs rather than as a stand alone business opportunity or to shelter active income from taxes.

Manufacturers wishing to introduce new or highly modified aircraft to the market must subject the new design to extensive testing. This testing provides some degree of assurance that the new product is safe for its intended purpose. This is done to insure safety but it also serves to block entry into the industry by outsiders. The downside for the industry is it makes it very expensive to insert new technology. Under the current low production situation, this almost guarantees that no significant changes will occur since the firms can not recoup the research costs at low sales levels. While this provides protection for the industry from new competition, it also prevents the introduction of new products that might increase sales.⁶²

Currently, the United States has some of the strictest certification requirements in the world. This effectively blocks entry from many foreign aircraft unless they are willing to meet our level of certification. Recently, the United States has changed its certification requirements to allow for certification of light aircraft under reduced certification standards. The new process is called the Joint Airworthiness Regulations/Very Light Aircraft rules. These rules were lobbied for by small aircraft company entrepreneurs wanting to avoid the standard certification process. The new law reduces the cost and time to get a small, trainer-style aircraft certified on the market. This will help these small aircraft firms as well as some foreign firms bring new aircraft to the market. At this time (1995), only two foreign manufacturers have received certification approval for their aircraft and begun any significant production.⁶³

⁶² The threat of increased liability also deters innovation, which is discussed in Chapter 4.

⁶³ The two firms are Zenith aircraft of Midland, Ontario and Diamond Aircraft, also from Canada. AOPA Pilot, December 1995.

Some of the rules enacted by different segments of the Civil aviation market work against each other. Large airlines wish to avoid costly delays, so would like to ban small aircraft from major airports. This is accomplished by lobbying the Federal Aviation Administration for regulations requiring expensive equipment and procedures in order to use the airspace as well as user and landing fees.⁶⁴ One of the more significant regulations was the establishment of control zones around major airports. These zones extend 20-30 miles out in a circle and 5000-10,000 feet up in the sky. These zones are needed to safeguard the flight paths of the large airliners to the airport, but also reduce flight activity in this area around the large cities. These new control zones encompass many of the surrounding general aviation airports needed by general aviation to make small aircraft travel feasible. This does improve safety within the airport control zones, but it drives away most of the general aviation traffic. Those who remain, must deal with increased rules, a higher stress environment, and the need to fly under the watchful eye of air traffic controllers. This requires a higher level of flight skill and training which raises the costs of flying.

The FAA has been lobbied by various groups to increase the amount of equipment needed on board aircraft to improve safety. Some of this equipment, such as Mode C transponders⁶⁵ and communications equipment, is to help air traffic controllers monitor and control the airspace. Much of this equipment is due to heavy lobbying by the commercial airliner industry and others who would like to see fewer aircraft sharing their airspace.

⁶⁴ Major airports require altitude encoding transponders, two-way radio communication and prior permission to enter most airport zones. These zones extend 20-30 miles out in a circle and 5000-10,000 feet up in the sky. These zones are needed to guard the flight paths of the large airliners to the airport, but also reduce flight activity in this area around the large cities. These new control zones encompass all the surrounding general aviation airports needed by general aviation to make small aircraft travel feasible.

⁶⁵ A mode-c transponder is an electronic device carried on the airplane that produces a signal picked up by air traffic control radar systems. It allows the controllers to see the position and altitude of aircraft which makes aircraft separation easier. This equipment costs \$1000-1500 new.

Therefore, they support legislation to make flying more expensive and cumbersome for general aviation. The second area involves technologies such as collision avoidance radar, high crash standards, and escape technologies. Though these systems might make flying safer, the resulting aircraft would be prohibitively expensive. This again plays into the hands of the opposing special interest groups who want small aircraft out of the airspace.

Currently, a wealth-transfer battle exists over the future of the Federal Aviation Administration. The Federal Aviation Administration currently receives its funding from general revenues and from aviation fuel and ticket taxes. General aviation customers do not directly pay for many of the services they currently receive.⁶⁶ Legislation has been submitted that would make the Federal Aviation Administration a self-sustaining agency, similar to the U.S. Postal Service.⁶⁷ Proponents argue that the current system subsidizes general aviation (as well as much of commercial aviation) at the expense of the general non-flying public. A significant part of this new agency would be the power to enact user fees to pay for the current free services. These user fees along with decisions on levels of service and new regulations would be decided by an appointed regulatory board. General aviation is opposed to the users fees since they pay very little currently as services are provided through federal tax dollars.⁶⁸ Thus they would lose the current subsidy and face user fees. General aviation may also lose access to major airports, since one function of the new corporation would be to allocate landing and take-off slots. The commercial aircraft operators with deeper pockets will be able to bid up the price to gain a larger share of the available capacity.

⁶⁶ General aviation users do pay taxes that fund most of the FAA, but these taxes are also spread over all taxpayers.

⁶⁷ McClellan, J. Mac, Flying, August, 1994.

⁶⁸ General aviation aircraft do pay aviation fuel taxes which offsets part of the costs of the services they receive.

The Aircraft Owners and Pilots Association has engaged in rent protection activities to preserve the current system.⁶⁹ Using their monthly publication, *AOPA Pilot*, the organization has provided a steady stream of information to its members and has advised them on who to contact in Congress to voice their disapproval. Taking a pro-active approach, they have helped draft competing legislation, the Duncan-Lightfoot Bill (H.R.2276) as an alternative approach. This bill also makes the Federal Aviation Administration independent of the Department of Transportation. Its supporters claim it streamlines the agency to allow modernization and improvement of current services, all without implementing user fees for general aviation.

Rising Costs of Maintaining Flight Privileges.

FAA regulations require annual or biannual flight reviews as well as currency requirements. These requirements greatly improve safety, but increase the cost of flying. The pilots must spend personal time and money to prepare for the tests as well as flying additional hours to maintain currency. These training requirements are meant to make pilots safer and keep them up to date on new regulations and changes in the airspace system. Proponents of stricter rules claim this is a "win-win" situation where the pilot is safer and so is the public. The net result is that as the rules increase to make flying safer, it makes it more costly to maintain one's currency, which reduces the number of participants.

⁶⁹ Boyer, Phil, President of the Aircraft Owners and Pilots Association, "Vision of the Future," *AOPA Pilot*, December, 1995.

Pilots also must receive periodic medical examinations to maintain their flight status. As the pilots gain higher level licenses, they require more detailed and more frequent flight physicals. As the level of scrutiny increases, this tends to reduce the number of pilots. The Federal Aviation Administration sets the policy that defines the physical standards that must be met. The Federal Aviation Administration can obviously be lobbied as well as its oversight committees on how tough or lenient the rules should be. Strict rules target older pilots or those with known medical conditions who must have more frequent and extensive physicals. Fighting a medical revocation can be a long and expensive process. Many older pilots simply stop flying since the costs of an appeal are often quite high and the chances of winning low.⁷⁰ This is often the group with the highest discretionary income, the most available time to fly and the highest percentage of aircraft ownership.

Recently, some in the medical profession have lobbied the Federal Aviation Administration for more thorough medical standards.⁷¹ The impact on pilots is possibly more thorough physicals while the medical profession increases its revenues from these more extensive and more frequent physicals. On the other hand, tougher physical standards will reduce the number of pilots, so it is not clear whether the total revenues will increase or decrease for the medical profession. Pilot groups argue this added medical scrutiny is wasteful since pilots already adequately police themselves and there is no medical or accident data showing a problem exists that warrants this change in medical standards.

⁷⁰ A typical appeal requires a pilot to undergo costly, detailed medical examinations in an attempt to provide evidence that the alleged medical problem is either insignificant or does not exist. Even with credible medical evidence, the process might require lengthy legal expenses, court battles and confrontations with FAA personnel. Unless the person makes a living by flying or has sufficient funds, most older pilots typically retire their "wings" and sell their planes.

⁷¹ Comments by Phil Boyer, Aircraft Owners and Pilots Association President, AOPA Pilot, November, 1995.

Impact of Airline Deregulation on General Aviation

The Airline Deregulation Act of 1978⁷² allowed airlines to engage in price competition and to change their route structure. As the airlines quickly expanded to exploit long distance routes, they abandoned small airports and overwhelmed the major airports. The general aviation pilots eventually were deterred from using the large airports due to the rising landing fees, regulation, and the growing congestion. For those who flew to the smaller satellite airports, another problem emerged. Though the airlines were gone and small aircraft operations were relatively safer, costs went up. These airports lost their subsidies which paid for airport amenities like full FAA flight services and control towers. When the airlines left, so did many of the rental car companies, restaurants and other traveler amenities. Now a pilot was faced with landing at an airport with minimal services and no way efficiently to carry out his business or recreation plans. The alternative was to use the busy, major airport with its higher user fees, congestion and unfriendly environment for small general aviation aircraft. It now often became cheaper to fly the airline to the major airport and rent a car at the airport to complete one's trip.

Empirically, did the rise in airline passengers due to airline deregulation coincide with the decline in general aviation? In Figure 16, the rapid increase of domestic airline passengers matches the decline of general aviation flying hours for the same time period.⁷³

⁷² This act allowed airlines to abandon government mandated pricing and required routes. The airlines expanded by dropping unprofitable routes and optimized route structure based on their equipment and load factors.

⁷³ Aerospace Industries 1993-1994 Facts and Figures, page 85. Original source Department of Transportation, Office of Aviation Statistics, *Air Carrier Traffic Statistics Monthly*.

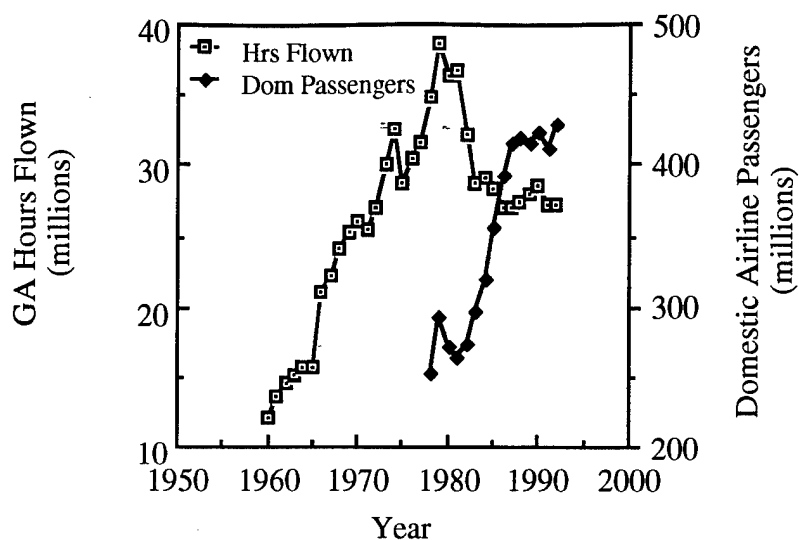


Figure 16. Comparison of GA Hours Flown to Domestic Airline Passengers

Foreign Competition

It has been suggested that the piston engine aircraft market may have suffered due to foreign competition that took advantage of the strong U.S. dollar during the 1980s and the current liability crisis.⁷⁴ Prior to the current slump in piston general aviation aircraft sales, the United States manufactured most of the world's piston engine aircraft. By 1992, the United States still dominated the market, but its share had dropped to 75 percent.⁷⁵ In 1980, there were 29 domestic manufacturers of certificated piston engine aircraft compared to 15 foreign manufacturers. By 1992, this had reversed itself with 29 foreign and only 9 domestic manufacturers.

⁷⁴ Rubin, David and Regina VanDuzee, The Demand for Single Engine Piston Aircraft, U.S. Department of Transportation, 1987.

⁷⁵ Rau, Robert, "General Aviation Issues," presented at the 1992 General Aviation Forecasting Conference. Robert Rau was the Executive Vice President for Parker Hannifin Corporation.

During the 1980s as United States piston engine plane prices rose and the dollar strengthened, Aerospatiale of France introduced a single engine, four passenger plane to compete in the market (1984). It competed with the Piper Dakota and Cessna 182 Skylane, but was a more modern looking design with a more stylish interior. The French plane's initial price was similar to the Cessna and Piper airplanes' prices, a situation that persisted until the late 1980s when the exchange rate fell. By 1992, the Aerospatiale Trinidad's average retail price was \$232,000 compared to \$189,000 for the Piper Dakota. Though Aerospatiale did sell several hundred per year at its peak, its sales have significantly slowed due to price increases and the poor exchange rates.

The only other significant entry into the piston engine market from abroad has been the Katana and Zenith aircraft companies of Canada. Both firms introduced a small single engine, two passenger trainer aircraft. They are modern designs with performance comparable to the American competition, but with prices higher than comparable refurbished older American training aircraft. Though their prices have risen with the exchange rate fluctuations, sales are relatively good, though low by 1970's standards.⁷⁶

Thus, it appears this industry has not been significantly hurt by foreign competition or major changes in foreign markets for American planes. Recent drops in the dollar have made American aircraft cheaper on the world market, but this has not been sufficient to boost new aircraft sales. Most American aircraft are old designs and must compete with new European designs incorporating more efficient engines and airframes as well as up-to-date styling. A more serious concern is that most European countries are enacting stringent noise and air pollution standards that aircraft must meet. Many American designs will not

⁷⁶ As of early 1996, Katana had built or pre-sold over 100 aircraft and Zenith sold a few dozen.

meet those new standards. Cessna has begun work on their re-introduction of the Cessna 172, 182 and 203 aircraft--all thirty year old designs. They are working on modifications to attempt to meet the new European requirements for noise emissions.⁷⁷

Foreign aircraft do have several advantages. Most designs such as France's Aerospatiale aircraft offer modern styling to an American market that has remained essentially unchanged for over twenty years. Second, the new training aircraft mentioned above offer airframes and engines that should lower operating costs to training schools. Finally, these foreign firms tend to have a small liability tail so are more willing to innovate with new technologies. Liability is a concern, but most foreign firms can balance the risk against sales in other countries where liability standards are not as costly.⁷⁸ There is also a downside to buying a foreign aircraft. Until these new aircraft have proven themselves in the American market, potential buyers might be skeptical of the quality, performance and resale of these foreign aircraft even with their relatively high content of American components. Second, potential buyers preparing to invest several hundred thousand dollars in an aircraft are concerned about the long term presence of the manufacturer and their ability to provide service in the future. Though all firms have American-based sales headquarters, one must consider whether the firm will respond positively to problems or be held liable for possible problems.

⁷⁷ Bedell, Peter, "Power For the New Cessnas," *AOPA Pilot*, August 1995, pp 109-112.

⁷⁸ Rubin, David and Regina VanDuzee, The Demand for Single Engine Piston Aircraft, U.S. Department of Transportation, 1987.

Microeconomic Impact of Low Production and Durable Used Inventories

A serious challenge for the general aviation industry is the healthy used-aircraft market. Due to safety concerns, these planes are over-designed to prevent most accidents through high levels of quality and reliability. This results in aircraft that last for thirty to forty years assuming reasonable maintenance. Most people who drive automobiles are familiar with the typical American experience of owning a new car for only five or six years. Whether due to careful analysis or just tastes, most tend to get a new or different car rather than overhaul and renovate an older one. This is just the opposite of the aircraft owner's experience. Airplanes are routinely overhauled with new engines, avionics, interiors and paint. The end result is an almost new aircraft for a fraction of the cost of a new one.

Most new aircraft built today have changed little in the past thirty years. Once a design is proven safe and reliable, manufacturers are wary of making major model changes due to liability considerations. What few new changes there are, often can be added to an old aircraft during a major overhaul. Thus, the industry's main competition comes from the quality products produced over the years and the lack of new, innovative models to generate interest.

To examine the used market, I derived a hedonic model of these used aircraft prices as a function of the aircraft age, total time on the airframe, time since major engine overhaul, and a factor based on aircraft improvements.⁷⁹ The model results are shown in Table 3.⁸⁰ The model exhibits a good fit and the coefficients have the expected signs. Table 4 shows

⁷⁹ Griliches, Zvi, "Hedonic Price Indexes Revisited," Price Indexes and Quality Change, Harvard Publishing, 1971, pp. 3-15.

⁸⁰ For this model, I used data for Piper Warrior aircraft with a sample size of approximately 50 for each regression.

how each contributes and the mean value of the data. Basically, the age estimator deducts \$1100 for each year, airframe time deducts \$2 an hour, engine time deducts \$4 an hour, and upgrades on the average can add over \$8000 to the used price. This is relatively close to the real world values of these items. An overhauled engine costs \$9-15K, so our model shows an engine at 2000 hrs (run-out) should subtract (\$4 x 2000 hrs) or \$8000. The cost of overhauling a aircraft in terms of paint, interior, and avionics completely would run over \$10K. The model shows that a full upgrade (30 x \$400) would add \$12,000 to the value, a close approximation to what these improvements cost.

Table 3. Used Aircraft Price Model (1994 Data)

Dependent Variable : Price				
Variable Name	Coefficient	Std. Err. Estimate	t Statistic	Prob > t
Constant	55.7928	3.6162	15.4288	0.000
Age	-1.0984	0.0779	-14.0936	0.000
TTAF	-0.0017	0.0003	-5.4311	0.000
SMOH	-0.0039	0.0008	-4.8739	0.000
total upgrade	0.4238	0.1307	3.2432	0.001
Coefficient of Determination (R ²)		0.6228		
Adjusted Coefficient (R ²)		0.6137		

If we take the equations as reasonable models of customer perceived aircraft value, they predict the maximum price of aircraft. An "almost-new" Piper with "full" upgrades would only be worth \$64K for an average plane plus \$12K for upgrades or \$76K. Now, it is not accurate to extrapolate this used model to new aircraft, since the database lacked new aircraft in the data. But, the model does indicate the consumer's willingness to purchase aircraft with certain attributes. If a late model Piper aircraft with a new engine, avionics, paint, and interior is only valued at \$76K, the new aircraft at \$150K must offer more than just being new.

Table 4. Used Aircraft Price Model (1996 Data)

Data File: 1996 Warrior		Dependent Variable: price		
Variable Name	Coefficient	Std. Err. Estimate	t Statistic	Prob > t
Constant	61465.27316	7530.92466	8.16172	0.000
Age	-1758.89080	183.69750	-9.57493	0.000
TTAF	-1.79714	0.29597	-6.07199	0.000
SMOH	-5.41198	0.97700	-5.53938	0.000
Upgrade	848.02220	244.26356	3.47175	0.001
Coefficient of Determination (R ²)		0.83091		
Adjusted Coefficient (R ²)		0.81212		

I re-ran the above model using January 1996 data to see what had changed over the two year period (Table 4 and Table 5). Table 5 shows a comparison of the sample mean values and the regression coefficients. We see the average price has increase \$4500 or almost 14 percent in two years--higher than the general inflation level. The total time on the airframes has risen, while the average age of aircraft offered for sale has dropped. This is significant since it shows that these newer aircraft are being flown more, and thus decreasing the existing stock of low-time, late model aircraft.

Table 5. Regression Data Comparison

	1994 Data		1996 Data	
	Coefficient.	Mean	Coefficient.	Mean
Price	n/a	\$33.2K	n/a	\$37.7K
Constant	55.79	n/a	61.46	n/a
Age	-1.098	19.95 yrs	-1.76	17.41 yrs
TTAF	-0.002	3457 hrs	-.002	4850 hrs
SMOH	-0.004	899 hrs	-.005	743 hrs
Upgrades	0.424	19.9	.848	23.1

The 1996 data indicates that total airframe time still cost \$2 per hours while engine time is worth \$5.40 per hour, an increase over the previous results of \$3.90 per hour. Aircraft age today subtracts \$1758 per year, an increase over the 1994 rate of \$1090 per year. Upgrades have doubled in value, increasing from a maximum of \$12,700 in 1994 to \$25,440 for the 1996 data. Using the model to price a "nearly new" airplane, this predicts a price of \$86,900--almost \$10,000 higher than the 1994 data. This data indicates that the aircraft available are slightly newer with higher hours than in 1994, but with higher real prices than in 1994. Still, the supply of used aircraft appear adequate to meet the near term demand and is still significantly cheaper than new aircraft at \$150,000.

Based only on this data, it appears that the aircraft manufacturers produced a long-lived product of high quality in the late 1960s, 1970s, and early 1980s that is seriously curbing demand for new aircraft in the 1990s. Unless the manufacturers develop a new technology or new style of aircraft, pilots appear to be content upgrading older, quality aircraft for one-third to one-half the cost of a new one. Most manufacturers have chosen not to redesign their aircraft due to the high costs of certification to obtain FAA approval as well as increased liability exposure associated with a new design.

The low production rates create a significant problem for the manufacturers. At low production rates, they fail to achieve economies of scale both in their plants and through their vendors. The low volumes have forced most to vertically integrate due to the lack of vendors for small subcomponents orders. Many firms, such as Piper Aircraft, essentially hand-build their aircraft since mass production technologies are too expensive for the current small production runs. The rise in costs at low production rates can be illustrated

as in Figure 17.⁸¹ At the high levels of output in 1980, the industry used more efficient production techniques which lowered their marginal and average unit costs. Today, the industry has changed its methods due to low sales which has shifted them to a new marginal cost curve resulting in higher average unit costs.

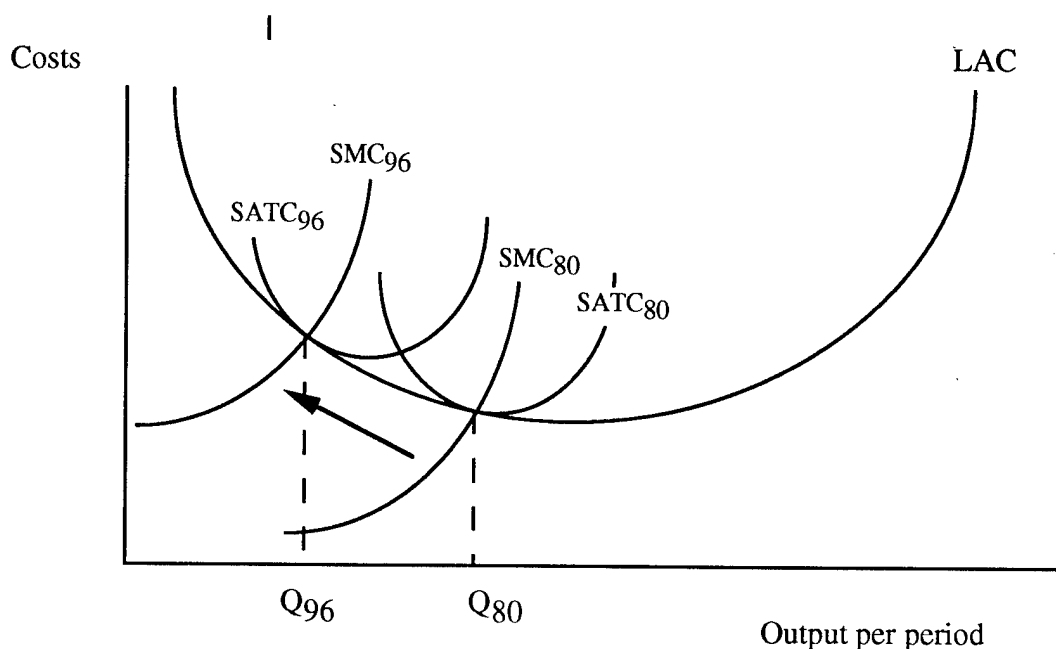


Figure 17. Shifting Cost Curves as Industry Output Dropped

⁸¹ Carlton, Dennis W. and Jeffrey M. Perloff, *Modern Industrial Organization*, Harper Collins College Publishers, 1994, pp. 55-58. In this diagram, it is assumed that in the short run, the firm has limited options to make changes in production technology or machinery. In the long run, the firm can make changes that allow it achieve the greatest efficiency given the output levels. In this diagram, the LAC curve represents the nexus of minimum cost points of all possible short run cost curves. Thus, this model implies that the 1980 curves represent production using more efficient technologies given the existing production quantities than those same plants could achieve at today's lower output levels. They also imply that if output suddenly rises, the current plants will be inefficient at higher output levels.

The low level of production raises the price of the new aircraft which further hurts sales. The low level of sales causes several other market externalities:

- Thick market externalities: As more companies advertised their products, more people received the primary message that flying was fun and accessible, thus increasing overall demand. The increased number of sales offices and support facilities made flying cheaper due to increased competition and the lessening of information costs. As sales drop, this reverses itself and information costs rise.
- The large number of firms created a "boom" that created an implementation cycle in terms of independent suppliers, materials and new technologies that eventually provide the industry with low cost components. With many firms in the factor markets, this allowed suppliers to size their operations to high levels of production to take advantage of more efficient production technologies. Today, many of the suppliers have left the market or produce small, higher cost quantities with little or no competition.
- With each firm in the industry doing research and development, there was a non-pecuniary externality created from the spillover of these private efforts to the industry. In today's high cost liability environment coupled with low production, little research and development occurs.

Simple inventory models (Murphy, Shleifer and Vishney, 1989) assume that at some future point the durable inventory will eventually depreciate or be consumed.⁸² When that occurs, demand will shift back to new goods and this will jump start the industry. For general aviation, it has been over a decade and this has not occurred. The reason can be seen in the assumptions of these models. The models assume that the good has no substitutes (other than the used product itself) and that consumers preferences do not change dramatically. Thus, when the used good is gone or its price has appreciated to that

⁸² Murphy, Shleifer & Vishny, "Building Blocks of Market Clearing Business Cycle Models," NBER Annual 1989, pp. 247-301.

of a new good, demand will return. In the case of general aviation, the bust has lasted over a decade and demand has not returned. The inventory of used aircraft is slowly declining, while demand for new aircraft is only slowly rising. These theories may be correct, but the time required for the market to recover (it has already been 15 years) may be longer than most industry analysts expect.

As in the Murphy, Shleifer and Vishney model, the firms can not coordinate the end of the slump. One firm increasing production slightly can not generate sufficient increasing returns to significantly lower its cost to boost demand. Thus, the model implies they must all wait until demand increases to meet their low output-high cost prices (much like an implementation cycle). In reality, the aircraft industry is not at zero output as the model suggests, but current production is only 5-8% of the previous peak production. Cessna has begun an effort to start new production and to jump start the industry in a way that reflects some of this model's insights. They plan on beginning production in late 1996 reaching an output of 2000 aircraft per year by 1998 or three to four times the current rate of the entire industry. Using this model, Cessna appears to be resting this effort on some basic assumptions:

- By starting at 2000 aircraft, this moves them to a different marginal cost curve that will take advantage of increased returns to scale. This will result in lower average costs that allows for a lower price and increased sales.
- With this level of output, they might be able to get some increased quantity discounts from suppliers. This might also entice old suppliers to re-enter the market. This new activity will also benefit the other manufacturers who might get cheaper factors of production which might translate into lower prices and more sales.

The recent passage of liability reform for light aircraft benefits Cessna the most since they have the largest number of used aircraft still flying. The new law exempts over half of their liability tail which improves their cost position. Cessna's advertising and revitalizing of the aircraft training and marketing infrastructure might create thick market externalities that will benefit all. It may also convince other firms to increase output if they see the recession ending (implementation cycle). There is some evidence that the used piston engine market is continuing to appreciate. Data⁸³ for the 1995 first quarter showed that inventories of used singles has dropped resulting in 10 percent fewer sales than the previous quarter. Prices also rose ten percent over the previous year--higher than the current inflation rate. Total general aviation used sales were 6644 (first quarter 95) compared to 8550 for the fourth quarter of 1994 and 13,051 for the top quarter in 1989. Sales quantities for used single engine piston aircraft dropped ten percent to 4,488.

Chapter Summary and Conclusions

The data presented in this chapter conclusively show that the industry has declined over the past fifteen years due to a number of possible causes. The rise in both the real and nominal prices of new aircraft have had an obvious impact on sales. McDougall and Chong (1986) did one of the few published studies of aircraft price elasticities. Their study showed that for the Cessna Skyhawk 172 (a single-engine piston, four passenger aircraft) the average price elasticity of demand between 1960 and 1985 was 5.96. However, once the market began its drop in 1981, the data for 1982 to 1985 at the upper

⁸³ Marketline Newsletter of the Aircraft Bluebook Price Digest, Fletcher Aldredge, Editor, August 1995.

portion of the demand curve showed a price elasticity of 22.31.⁸⁴ If the rest of the aircraft market had similar characteristics, the large price increases would cause a major decline in sales. The changing demographics of the population and the drop in military pilots have also affected the supply of civilian pilots. Many of the pilots who contributed to the increased aircraft sales and flight activities were military trained or learned to fly through military sponsored programs.

These first two areas, price and pilots, are often proposed as the main reasons for the decline. Yet, this chapter and the next two indicate that rent-seeking is partially responsible for this drop. The oil cartels did have a rather significant effect on aviation fuel prices early on, but that has essentially reversed itself. General aviation did participate in obtaining the favorable tax credits and depreciation schedules that boosted sales in the late 1970's. The industry actively supported the expansion of the GI Bill which provided direct subsidies for flight training. General aviation supported airline regulations that subsidized small general aviation airports, but was also hurt when those subsidies went away. General aviation has also been hurt by the encroachment of the suburbs and tax-poor county governments on its airports. Flying has become more expensive as regulations add mandatory equipment, more training, and restrict access to airspace and airports. As I show in Chapter 5, increased litigation encouraged by the legal profession has contributed to the large rise in new aircraft prices and to the manufacturers reluctance to introduce new products.

⁸⁴ McDougall, Gerald S. and Dong W. Cho, "The Demand for the Cessna Skyhawk Aircraft," The Center for Business and Economic Research and the Institute for Aviation Research and Development, Wichita State University, Wichita, Kansas, May 1986.

Thus, this chapter has shown how several possible shocks to the industry resulted from interest group rent-seeking efforts. This provides some evidence that this industry's economic ups and downs can be better explained by the series of aggregate rent-seeking shocks than from standard macroeconomic explanations. Though the general economy provides the background for this rent-seeking cycle, it appears that the industry's efforts toward recovery might be better served through rent-seeking efforts that benefit general aviation.

Chapter 4. The American Liability Structure

Introduction

Single-engine piston general aviation spokesmen are rather outspoken about their belief that increased liability costs have significantly contributed to the decline in their industry.¹ As shown previously, there is no doubt that general aviation liability and litigation expenses have grown significantly while the small aircraft accident rate has dropped. The issue is whether this rise in costs and industry decline is the efficient result of a properly working liability system. In this chapter, I present several liability theories and their expected results. I also discuss how public choice theory shows a different, less efficient outcome in some cases. Using this background, Chapter 5 provides data on what has occurred in the general aviation industry under the current liability standards and how these results compare with these theories.

Economic Models of Liability

One of the earlier economic models of tort liability was the Hand formula. This simple model was developed by Judge Learned Hand and used in *United States v. Carroll Towing*

¹ Collins, Richard, "Cessna Boss Talks About the Future," *Elying*, August 1994.

Co.² The case involved a barge that broke free and caused subsequent damage. One question in this case was how much precaution a potential tortfeasor take to avoid a possible accident. Judge Hand defined a simple relationship between the probability of an accident (P), the resulting damage if the accident did occur (L) and the burden of precautions adequate to prevent the accident (B). Judge Hand decided that the owner would be negligent if the burden of precautions (B) was less than the probability of the accident times the damage (PL), or:

Learned Hand Formula: $B < PL$

Though this simple model only considered the potential injurer's care, it did provide a basis for using economic models to examine accident law. The problem with the Hand formula was that it is not explicit about whether accident costs and benefits are to be considered in the correct marginal rather than total terms. Further, it fails to consider the level of care exercised by the accident victim.

A more recent model that can be used to discuss the theoretical underpinnings of liability is one described by Posner and Landes (1987) which considers both parties to the accident and considers the correct marginal cost.³ The model considers the total social

² United States v. Carroll Towing Company, 159 F.2d 169 (2d Cir. 1947).

³ Landes, William and Richard Posner, The Economic Structure of Tort Law, Harvard University Press, 1987, pp 54-84. In the book, the authors attribute the origins of the model to John Prather Brown, "Toward an Economic Theory of Liability," Journal of Legal Studies 323, 1973.

costs which are a function of the level of care provided and the expected costs of an accident. The social costs, $L(x,y)$, are defined as:

$$L(x,y) = p(x,y)D + A(x) + B(y) \text{ where}$$

- x and y are the levels of care taken by the injuree (A) and the injurer (B).
- $p(x,y)$ is the probability of an accident as a function of the care (x,y) .
- D denotes the dollar equivalent of the injury to A.
- $A(x)$ and $B(y)$ are the costs of care to A and B, respectively.

Thus, the total social costs are the expected value of the cost of the accident to A plus the costs of care on the part of A and B. One can find the values that minimize the social costs, x^* and y^* , by taking the first partial derivatives of L with respect to x and y and setting that equal to zero:

$$A_x = -p_x D \quad \text{and} \quad B_y = -p_y D$$

This shows that each should increase care until the marginal cost equals the last unit of care as shown in Figure 18.

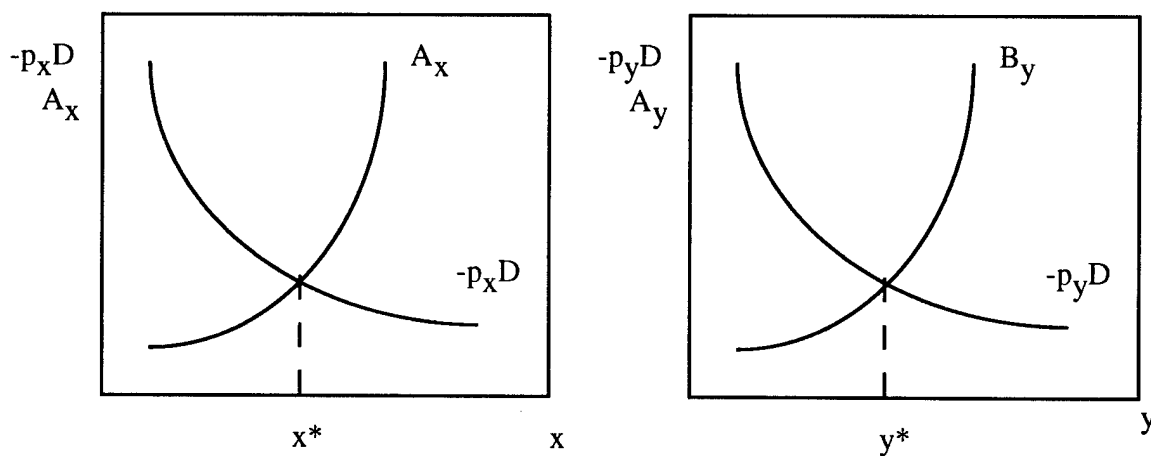


Figure 18. Optimal Care versus Expected Damage.

In the model, the level of care (x and y) can range from doing an activity more carefully to doing less of the activity or from investing in a better product or more careful use of the product. In this model, A is considered the consumer using the product or service provided by B. Thus, A has the option of taking various levels of care to avoid accidents or neglecting to take adequate care and suffering an accident. As the manufacturer, B has the option of making a "fool proof" product or a dangerous one depending on the level of care (y) he chooses to invest. However, the required level of care needed to eliminate all potential accidents may require the manufacturer to cease production.

There are three general cases to consider--no liability, negligence and strict liability. First, no liability implies that the manufacturer will not be held liable regardless of his level of care. In an economic sense this may be optimal. In this case, the user A will invest in x up to $A_x = -p_x D$ given that $y=0$. This is optimal if $y^*=0$. If the manufacturer does invest in some level of care $y>0$, then A may invest in too much care ($x>x^*$), which would be inefficient ($x^*, y^* > 0$). An example would be pedestrians wearing helmets and pads to cross the street because they assume drivers will not try to avoid them. In the case of aviation if there were no liability, the pilots would either stop flying or else wear parachutes and install ejection seats.

No liability does have a few advantages. The administrative costs are zero since the injured party (A) can not sue, thus no litigation results. This reduces court costs and provides no opportunity for rent-seeking by trial lawyers. However it also provides little incentive for the manufacturer (B) to make a safe, quality product. Governments often attempt to impose a no-liability standard on their activities and services. As an example, most military servicemen are not allowed to sue the government for damages suffered as a result of their enlistment.

The second broad area involves different types of negligence standard where the victim's level of care can affect the outcome. In the first case, the injurer (B) is only liable for the victim's damage if the injurer fails to take due care. If B does take full due care equal to y^* , then he is exempt from damages. This system has the advantage that the manufacturer has the incentive to provide y^* at all times to avoid lawsuits.

A similar case involves contributory negligence. This case considers whether A was also negligent. If $x < x^*$, the plaintiff's negligence is a complete bar to recovery even if $y < y^*$. Here, the defendant can escape liability by investing in y^* at all times. However, it does offer the possibility for $y < y^*$ if the defendant has information that the plaintiff may underinvest so that $x < x^*$.

A final version is comparative negligence. In this case, the damages are divided between the plaintiff and defendant in the same proportion as their negligence. As before, $y > y^*$ will safeguard the defendant, but the plaintiff now has an opportunity for a partial recovery even when $x < x^*$.

The negligence standard of liability requires higher information and administrative costs since the courts must evaluate y^* and sometimes x^* . The administrative costs are higher, but one might have fewer cases than strict liability. The simple reason is that under contributory negligence, plaintiffs may not file in every case if $x < x^*$ or if proving $y < y^*$ is difficult. Under comparative negligence, even with $x < x^*$, there is now the possibility of recovery for the plaintiff, so this should increase the quantity of litigation. The tertiary costs will increase since the juries must now determine x and y , but also x^* and y^* for comparison along with appropriate damage awards.

The third major case involves strict liability. In this case, the manufacturer (B) is always liable so must always invest (y^*) in safety. Theoretically, victim A has no incentive to invest in safety since he assumes he will always be compensated. Thus, unlike no liability where the administration costs were zero, in strict liability every accident produces a claim for compensation. Without contributory negligence, the manufacturer (B) must invest y^* to reduce the number of accidents to a minimum, but y^* is no longer a defense against liability.

Cooter and Ulen (1988) claim that the choice of rule is irrelevant since each creates incentives for efficient precaution by potential victims and injurers.⁴ They state that "rationally self-interested parties are led by considerations of self-interest to choose the legal standard of care under any of the negligence rules." The basis of their proof is that one of the parties can escape responsibility by choosing x^* or y^* . The other party will then choose an appropriate x or y to minimize their costs by balancing their level of precaution with the expected damages they will have to pay. This is shown in Figure 19 below. In this case, the manufacturer begins investing in y up to y^* which reduces the total costs (liability for expected accident costs plus level of care costs) until the firm is no longer liable (negligence standard). After y^* and with no expected accident costs, the firm only incurs additional precaution costs.

A major difficulty with all of these rules concerns the definition of x^* or y^* . The models suggest that courts have access to clear and definitive definitions of these levels of safety and precaution. The reality is quite different. For the user, x^* is a function of the user's propensity for risk, the consequences of $x < x^*$, the user's knowledge of the product

⁴ Cooter, Robert and Thomas Ulen, Law and Economics, HarperCollins Publishing, 1988. pp. 326-371.

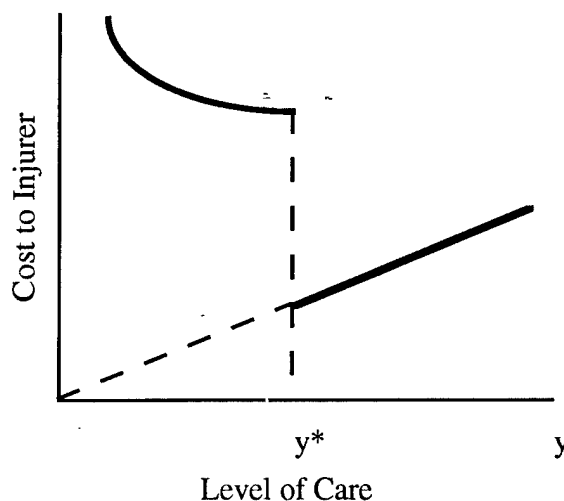


Figure 19. Determination of the Minimum Cost Level of Care

and existing societal norms concerning that product. A prime example was the recent McDonald's coffee case where an elderly woman bought and received a cup of hot coffee through the drive-in window. Upon driving away, the woman spilled the hot coffee on herself, sustaining serious burns. In this case public opinion considered x^* to be quite high and that the woman failed to take proper care. However, the courts decided that the coffee was too hot for the flimsy container ($y < y^*$) and that the woman's actions were normal considering the product's intended use ($x \geq x^*$). This uncertainty over x^* or y^* raises costs since either or both might over-invest in safety or precaution. Furthermore, x^* and or y^* are often decided by judges or juries, whose knowledge in specific areas are questionable. This is discussed in the next chapter for the case of general aviation.

Finally, by allowing juries or judges to make x^* and y^* flexible, the courts make it increasingly difficult for firms accurately to estimate their liability exposure. For example, if one is supposedly under a comparative negligence standard, then firms can make decisions to meet assumed y^* levels of safety. But, if courts and juries hold y^* companies

up to y'' standards (where $y'' > y^*$) this effectively creates a strict liability environment. The defendants will have to invest in safety up to some strict liability y'' . These decisions create greater administrative costs due to the high information costs of determining proper levels of care and this increases litigation. By allowing lawyers to challenge y^* levels, juries and judges can effectively submit defendants under a comparative negligence system to the equivalent of strict liability standards. As y'' increases, this increases the share of the negligence attributed to the defendants, which approaches that of strict liability.⁵ This opportunity (flexible y^*) encourages lawyers to increase their rent-seeking since the possible rewards are increased. It also allows juries to compensate accident victims more fully if the juries wish to use the court system as a means of social insurance.

Cooter and Ulen (1988) point out that when awarded damages are not perfectly compensatory, the manufacturer's actions will not be efficient. If the court awards are too small, this will not incentivise the manufacturers to make sufficient investments in safety. If the awards are too large, then the firms will over-invest in safety or leave the market. Figure 20 shows this point. If the compensation is perfect, then the injurer invest y^* and avoids future liability. If the court awards are too small, the injurer minimizes his costs by investing in $y' < y^*$. If the awarded damages are too high, the injurer invests $y'' > y^*$ which might cause the firm to produce too little of his product at too high a cost or even force the firm out of business.

⁵ Note that under strict liability there is no standard of care, y^* , that protects the manufacturer. Rather, they must invest in some level of safety that minimize the sum of safety innovation and accidents since they are liable in every case.

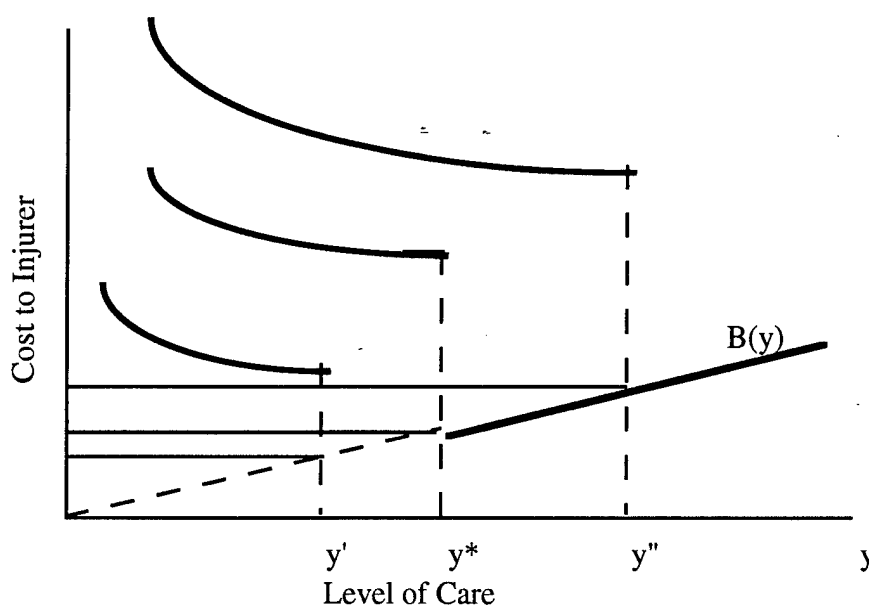


Figure 20. Costs to Injurer at Different Levels of Care.

A further problem with this model is that it fails to show the consequences of the administrative costs of the shifting values of y^* . In Figure 21 below, the first diagram shows the addition of the administrative costs under negligence. The additional costs are those of the courts system and the attorneys fees that inflate the costs of the defendant. These additional costs provide an increased incentive to the potential defendants to invest in safety up to the y^* level. Once y^* is invested, the administrative costs have no effect on the potential injurers costs. The second figure shows what happens under uncertainty over the proper level of y^* . In this case, the courts through its ruling impose a new level of care, $y'' > y^*$, which increases the costs to the injurer. If one assumes it takes some finite amount of time and investment to go from y^* to y'' , the injurer faces dramatically larger liability costs during the transition. If the firm does invest in y'' , this still results in higher permanent precaution costs, $B(y'')$.

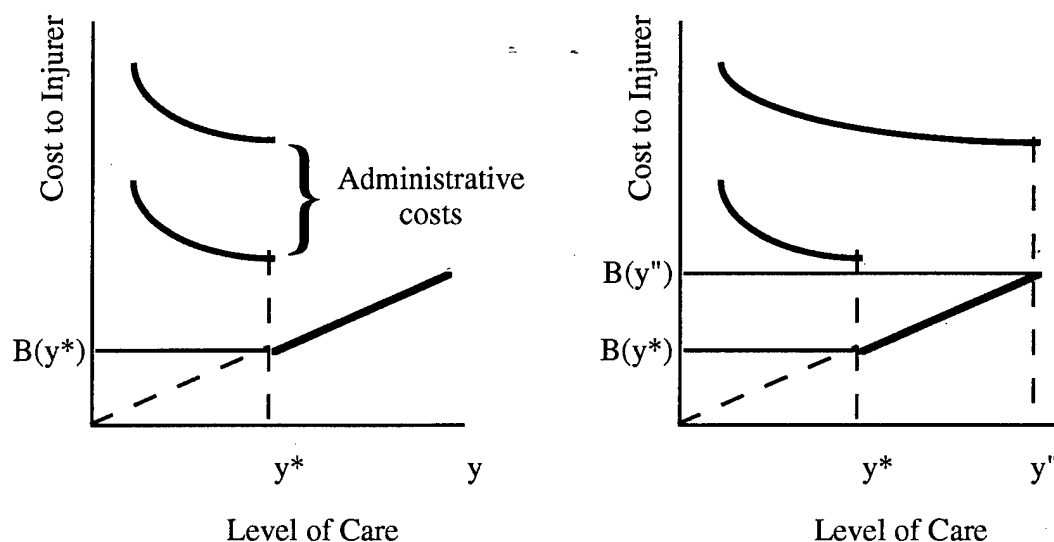


Figure 21. Costs of Liability with the Addition of Administrative and Shifting Values of Y^* .

Today, most states have comparative liability standards. Landes and Posner (1987)⁶ present data showing the majority of states adopted a comparative negligence statute in the 1970s and 1980s, moving away from contributory negligence. This move to comparative negligence increases the number of possible lawsuits, since plaintiffs can recover partial damages despite their personal negligence. This provides an incentive to lawyers to pursue this type of case since there is now an increased probability of obtaining a judgment that will compensate the victim and their attorney. With a compassionate jury viewing a grieving survivor whose spouse died in a traumatic way, the defense has a difficult time satisfying a jury that there was nothing further they could have done to make the aircraft safer. The plaintiff's attorney need only suggest a few minor improvements or precautions that theoretically could have prevented the tragedy. Yet, even with this, the

⁶ Landes, William and Richard Posner, The Economic Structure of Tort Law, Harvard University Press, 1987, pp. 83-84.

attorney's "winning" share may be small or the losing firm may have insufficient assets to pay the award due to shallow pockets.

The concept of joint and several liability has also been used to increase wealth transfers and get around the problem of defendants with shallow pockets.⁷ This legal concept means that the plaintiff may proceed jointly against several alleged injurers or the plaintiff may elect to recover all damages against one. This allows the plaintiff to focus attention on the person or firm who is believed to have the greatest wealth, regardless of the degree of negligence. This further encourages rent-seeking and litigation since greater opportunities for wealth transfers.

In the case of aviation, each aircraft has a large number of sub-components and systems provided by other firms. These sub-components are often provided by large firms (compared to the aircraft manufacturer) that have deep pockets. This was the case of Gates Rubber corporation which provides rubber hoses and belts to the automotive industry. The aircraft industry represented a very small market, yet offered the possibility of large lawsuit awards and defense costs. Thus, they pulled out of the aviation market since the small profits were dwarfed by the potential loss.

For general aviation, the chain of events that creates this strict liability type of environment is simple. The shift to comparative negligence allowed and encouraged lawsuits brought by historically negligent pilots who previously had to turn to insurance for recovery. Due to the difficulty in investigating accidents and discovering the true cause of the accident, it is not too difficult to find the manufacturers at least partially negligent in

⁷ Cooter and Ulen, Law and Economics, pp. 408-410.

most cases. Once the manufacturer is found partially negligent, the concept of joint and several liability allows the court to hold the manufacturer financially responsible for the damages. To the manufacturer, the comparative negligent statute is irrelevant since they find themselves being sued in almost every accident and having to pay large defense costs and occasional damage awards. With firms such as Cessna spending over \$500,000 just in defense costs per case,⁸ the liability costs to the manufacturers approach that of what strict liability might impose. The only difference is, under strict liability, most of the money would go to the injured parties instead of the lawyers.

The level of pilot care, x , obviously plays a role in accident prevention and liability costs. Unlike many other products, flying an aircraft requires a high degree of care each flight in order to achieve a safe outcome. This brings into question what level of care, x , is required. Theoretically, if we truly had strict liability, $x < x^*$ could be expected. This would require aircraft manufacturers to build aircraft that almost anyone could safely fly under any conditions.⁹ This "idiot" proof aircraft would be quite expensive and probably not built. The reality is that pilots must learn to fly and exercise a level of care equal to x^* , if only to meet Federal Aviation Administration standards. Yet, violation of these rules is not a defense for the manufacturer.

⁸ Collins, Richard, "Cessna Boss Talks About the Future," *Flying*, August 1994.

⁹ Shavell, Steven, "Strict Liability versus Negligence," *Journal of Legal Studies*, 1980, pp. 1-25. Shavell does maintain that in order for strict liability to work, the product must be such that increased care on the part of the manufacturer can reduce losses. He also notes that the potential victim must accurately perceive the risk of $x < x^*$. In the case of general aviation accidents, it may be that neither one of these assumptions are applicable in most cases.

Under the Second Restatement of Torts (1965)¹⁰ by the American Law Institute, a manufacturer's product must be determined to be defective under one or more of the following:

1. The alleged defect may have occurred in the manufacturing process.
2. The alleged defect may have occurred in the design process.
3. The defects consist of the manufacturer's failure to warn of dangers in the use of the product.

The first case calls for strict liability since the pilot is unlikely to find all manufacturing defects, so the manufacturer should be held accountable for maintaining a high level of y^* as the least cost avoider. The second area is questionable for one reason. Normally, this means the design was faulty and failed to provide a margin of safety for all known flying environments. However, this has taken on a new focus due to the aging fleet of aircraft. Manufacturers are being sued today for aircraft they build forty years ago that fail to meet today's standards. I discuss this in Chapter 5, but the problem is that the definition of y^* that the manufacturers often face in court is not the one they maintained when the plane was built. Thus, even under a negligence standard, the manufacturers may invest in y^* to avoid accidents and liability only to have the courts impose a "new y^* " after the fact.

The final area concerns the level of precaution and safety that consumers must invest in and practice. Flying is inherently dangerous and unforgiving if less than proper precaution is not taken, $x < x^*$. Cooter and Ulen (1988) point out that strict liability only requires unilateral precaution. This means that efficiency only requires one party (manufacturer) to take precautions against accidents. This makes sense when precaution

¹⁰ Cooter, Robert and Thomas Ulen, Law and Economics, HarperCollins Publishing, 1988, pp. 372-476.

can only be taken by one party. But, if the activity requires bilateral precaution, strict liability creates an incentive problem for the user and an inefficient situation. The user might invest too little precaution. This implies that strict liability or a move toward de facto strict liability as discussed above might produce inefficient results. If the real problem in crashes is that $x < x^*$, then the system should encourage pilots to invest in x^* .

In the precedent setting Yuba Power case, the California Supreme Court clearing stated:¹¹

We need not recanvass the reasons for imposing strict liability on the manufacturer . . . The purpose of such liability is to insure that the costs of injuries resulting from *defective products* are borne by the manufacturers that put such products on the market rather than by the injured person who are *powerless to defend themselves*.

This case implied that juries must consider the negligence of the plaintiffs to determine if they were powerless to defend themselves and if the product was defective. Data from the National Transportation and Safety Board for 1983-87, a period in which liability costs rose dramatically, indicated that out of 14,000 accidents during this period, 85 percent were wholly or partially due to pilot error.¹² This hardly seems like consumers that were "powerless to defend themselves." If the product has many known dangers inherent in its normal use, then the consumer should be responsible to take reasonable care. If there are dangerous defects and they are easy to spot, the consumer has a responsibility to exercise caution and is probably the least-cost-avoider. More important, if history shows that accidents involving this product are mainly caused by the user, then it should be a comparative or contributory negligence standard not strict liability.

¹¹ Greenman v. Yuba Power Products, Inc., 59 Cal. 2d 57, 333 P.2d 897, 901 (1962)

¹² National Transportation and Safety Board Annual Review of Aircraft Accident Data, 1988.

One way to motivate the pilots to take more precaution is to make them responsible for their own damages. This could happen using an insurance market to share the risk among pilots. Insurance companies would motivate pilots by placing restrictions on flight activities, requiring training and charging appropriate premiums. As the premiums rise to cover the cost of the pilot's negligence, this would provide an incentive to reduce the dangerous behavior and increase x toward x^* . Some of this is in effect today, but the aviation insurance market protects the pilot's investment in his aircraft, not his life. Many life insurance companies specifically void coverage for aviation accidents where the deceased was riding or operating a small aircraft. If, as the National Safety Transportation Board reported, pilots caused or contributed to over 85 percent of accidents, then they should shoulder an equal amount of their personal damages.

In the case of flying, the activity requires caution on both sides. This implies that not only must the manufacturer maintain $y \geq y^*$, but the pilots must maintain $x \geq x^*$. Movement toward strict liability is not appropriate in this market where the pilots historically have been proven negligent in the majority of accidents. The increased litigation against the manufacturers is due to rent-seeking on the part of the legal profession to find a source of income as well as a source of funds to compensate the crash victims. Not only is the rent-seeking by the attorneys inefficient, but the compensation of the negligent pilots provides the wrong incentive. If the main cause of most crashes is pilot error and manufacturers can not build an "idiot proof" aircraft ($y \gg y^*$), then the solution appears to be a system that encourages the pilot to increase x toward x^* as the least cost avoider. Contributory negligence provides the incentive for pilots to exercise $x \geq x^*$. Comparative negligence in theory works, but the reality has proven different as discussed in Chapter 5. Even with investigations determining pilot error, courts have been reluctant to find pilots fully negligent and have the pilots face their share of the accident costs.

Costs of Litigation and Rent-Seeking

Strict liability implies that courts must often assess significant damages to motivate firms to improve the safety of their products. Data¹³ presented in the "Report of the Tort Policy Working Group" noted that:

In terms of awarded damages, a small percentage of all tort cases account for a very large percentage of total awards . . . this produces a rather large incentive to sue than if everyone received the average award . . . uncertainty as to what the rules of tort liability applicable to this area of law will be in the future increases the prospects of more litigation.

The relatively rare high awards increase the variance which can increase the expected value of the litigation. These occasional high awards are much like high cash awards for winning sporting events, such as golf tournaments. The top prizes are high, while the remainder are relatively low or non-existent. This encourages high effort due to the high marginal value associated with winning the top prize.¹⁴ Without these large differences, there would be little incentive to put out the extra effort to be the best if an average effort would gain one almost as much. Thus, in aviation law, the occasional high award encourages plaintiff suits.

Bradford Cornell (1990) comes to the same conclusion regarding the high occasional award.¹⁵ He develops an option-pricing model that shows increased variance of awards

¹³ "Report of the Tort Working Group (Washington D.C., 1986) referenced in "The Incentive to Sue: An Option Pricing Approach," by Bradford Cornell, in *The Journal of Legal Studies*, Vol. XIX, 1990.

¹⁴ Lazear, Edward P. and Sherwin Rosen, "Rank-Order Tournaments as Optimum Labor Contracts," *Journal of Political Economy*, Vol. 89, No. 5, 1981, pp. 841-864.

¹⁵ Cornell, Bradford, "The Incentive to Sue: An Option Pricing Approach," *The Journal of Legal Studies*, January 1990, pp. 173-187.

leads to higher values of litigation options. In his model, plaintiffs determine expected values for all possible options that range from dropping the suit, settling out of court or continuing to trial. The higher variance creates higher option values and a larger incentive to bring a law suit. Additionally, there is a perceived benefit by filing suits even if it clogs the court system. During the long delays, precedents may change, new evidence may appear or the defendants may give up and settle. Thus, as the number of lawsuits filed increases, this only increases the incentive to sue. Cornell's report (1990) showed that product liability actions filed in Federal Courts from 1974 to 1985 increased by 758%. Cornell views legal claims as an investment opportunity that can be enhanced by the structure of the court system. Ease of entry and exit along with rapidly changing precedents increase the value of litigation. He writes:¹⁶

The option value of filing a lawsuit arises because the plaintiff has the choice to pursue litigation under favorable circumstances or to drop the suit in unfavorable situations. The more flexible the legal procedure, the more choices the plaintiff has, the greater the option value of the case. . . . [since] jury awards have become more uncertain, legal standards more unpredictable, and legal procedures more flexible . . . all of these developments increase the value of litigation options and thereby increase the incentive to sue.

Paul Rubin (1993) argues that the increase in litigation is evidence of the inefficiency of the law, just the opposite of the efficiency position as described previously by Landes and Posner.¹⁷ Inefficient rules allow for more litigation since they fail to encourage due care

¹⁶ Cornell, Bradford, "The Incentive to Sue: An Option Pricing Approach," The Journal of Legal Studies, January 1990, p. 177.

¹⁷ Rubin, Paul H. Tort Reform by Contract, AEI Press, 1993.

on one or both parties. Parties will continue to file lawsuits to challenge the inefficient rules until the courts move toward a more efficient set of rules. Once this happens, Rubin claims that this will reduce litigation. Thus, according to Rubin's general argument, the recent increase in litigation provides some evidence of the inefficiency of strict liability. Furthermore, Rubin (1982) argues that the inefficiency is a function of the ease of rent-seeking by special interest groups.¹⁸ He states that the reduced cost of organization enables groups or individuals to reshape the common and statutory law.

George Stigler (1992) recently proposed a view that supports the public choice theory.¹⁹ He notes that Posner and Landes (1987) acknowledge special interest groups, but that they state "redistribution (under common law) is difficult to achieve, an interest groups' best strategy is to support policies that will increase the wealth of the society as a whole, because the members of the group can be expected to share in that increase." Stigler finds this statement to have no support, offering instead that interest groups produce and retain the doctrines of common law that serves them best. Stigler notes that efficiency is to be judged only with respect to the goals one seeks--here the rent-seeking goals of the interest groups.

Charles Rowley (1990) takes a more direct public choice view of why the move toward strict liability occurred.²⁰ He writes it was a rather simple case of rent-seeking, stating that:

The revolution [in the law of tort] was activist, driven by attorneys in search of high expected rents from increased litigation, supported by legal scholars of

¹⁸ Rubin, Paul H., "Common Law and Statutory Law," *Journal of Legal Studies* 11, 1982.

¹⁹ Stigler, George, "Law or Economics?" *The Journal of Law and Economics*, October, 1992, pp. 455-468.

²⁰ Rowley, Charles, "The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique," *The Right To Justice*, 1990, pp. 355-383.

interventionist predilections and by judges and juries whose social consciences too frequently led to changes in precedents conducive to a flood-tide of litigation and to the widespread shift from consent of coercion in the law of accidents and personal injury.

Efficiency theorists do not take into account the rent-seeking wealth transfers that have occurred. Their theories are based on the concept of allocating risk and investing in safety. When efficiency theorists pose that the potential injurer should invest in Y^* , they merely see Y^* as a capital or innovation investment to improve safety and that this will reduce their liability. The potential victims will not have to invest in safety and the overall costs to society be lower. Due to the system they helped create, efficiency theorists have changed the "function" that defines liability for a firm. Before, the liability costs may have been:

$$\text{liability costs} = f(\text{tech innovation, customer safety})$$

$$\text{strict liability costs} = f(\text{tech innovation})$$

$$\text{where } \frac{\partial \text{liab costs}}{\partial \text{tech innov.}} \text{ is negative}$$

Thus firms that invest in new technologies, could produce safer products. This has the inherent assumption that by investing, this demonstrates a desire to improve safety. Posner and Landes (1987) offer that tort law can deter accidents as shown by some minor empirical evidence for automobiles²¹. Even if the tort laws have no effect on accidents, they claim tort laws still are capable of providing retribution for which tort remedies are a solution. In the second half of this chapter, I present evidence from the aviation community that disputes this finding.

²¹ Landes and Posner, *The Economic Structure of Tort Law*, Harvard University Press, 1987, pp. 10-11.

Viscusi and Moore (1991) point out that strict liability may well have reduced or stalled innovation.²² The basic reason is that new technologies are suspect and thus easier targets for lawsuits. Evidence exists that tends to show strict liability has not only reduced innovation, but caused firms to withdraw products or exit the market completely. Furthermore, old, less-safe technologies that have survived court tests are relatively inexpensive. In industries where liability costs are high, firms must often spend their research budgets on litigation expenses and not on innovation. The net effect is that new innovation can actually increase liability costs instead of decreasing them:

$$\text{strict liability costs} = f(\text{tech innovation})$$

$$\text{where } \frac{\partial \text{liab costs}}{\partial \text{tech innov.}} \text{ is positive}$$

Huber (1988) defines this liability expense as a tax on everyone²³. He estimates the tax at over \$80 billion dollars per year for the United States. He claims that it is probably much higher due to the lost innovations which would significantly increase productivity and output. He argues that by releasing consumers of responsibility, this strangles innovation on the part of industry and businesses. Thus it is arguable that the Posner style calculation fails to take into account the negative impact on innovation and the cost to society of lost productivity. Add to this the loss to society caused by the rent-seeking of attorneys and it is no longer clear that strict liability is even close to being efficient or optimal. Calabresi (1970) claims that "the rules of tort liability should be structured so as

²² Viscusi and Moore, "An Industrial Profile of the Links between Product Liability and Innovation," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 81-119.

²³ Huber, P.W., Liability: The Legal Revolution and Its Consequences. 1988.

to minimize the sum of precaution, accident, and administration costs²⁴." The rents paid to attorneys would probably be his administration costs, yet I doubt that the current system minimizes the costs.

The losses due to lack of innovation might be quite large. Viscusi and Moore (1991) have studied this issue and provide some empirical evidence that these costs are large²⁵. They looked at two digit manufacturing industries and compared innovations rates (patents) and insurance losses. Though a few industries showed slight increases in innovation, most showed stalled or decreasing innovation as liability costs rose. Aviation in particular showed stalled progress while insurance costs rose so dramatically that the industry had to find innovative ways to provide insurance.

Steven Shavell²⁶ notes that under strict liability, people and firms are liable for all harm they may cause or be associated with. Not only do they consider their most efficient precaution levels (Y^*) but also their activity levels. In theory, potential injurers will reduce damage producing activities if that is a relatively inexpensive way to avoid liability and there exists reasonable substitutes. Typical text books²⁷ would use the example of a construction firm blasting with dynamite to clear rocks. With strict liability, the texts offer that firms might reduce this activity to a minimum or substitute a safer activity. In the United States, this reduction in activity has taken the form of many firms ceasing production. A study by Nathan Weber (1987) reported that 25 percent of the nation's Fortune 500 firms withdrew products from the market due to liability or liability insurance

²⁴ Calabresi, G., The Costs of Accidents: A Legal and Economic Analysis, 1970.

²⁵ Viscusi and Moore, "An Industrial Profile of the Links between Product Liability and Innovation," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 81-119.

²⁶ Shavell, Steven, "Strict Liability versus Negligence," Journal of Legal Studies, 1980, pp. 1-25.

²⁷ Cooter and Ulen, Law and Economics, pp. 335-336.

problems.²⁸ Another by Patrick McQuire (1988) showed that in 1986, 47 percent of firms had withdrawn products, 39 percent had decided against introducing new products, and 25 percent had discontinued new product research.²⁹ Many firms have left to sell their products and services in countries with a more favorable legal environment. Shavell would maintain that these were obviously dangerous products whose price elasticity failed to cover their increased share of liability costs--thus, the system worked. Opponents to Shavell would offer that the rise in liability costs was due to the recent increase in rent-seeking by the legal profession.

One reason firms might withdraw has been discussed by George Priest (1987).³⁰ He claims it's "due to adverse selection deriving from the shift of the insurance obligation from first to third-party coverage as a consequence of the expansion of liability." His basic claim is that if first and third party coverage were the same (with no transaction costs), we should see no insurance effects. His research shows that third party insurance costs through the new tort system are at least three to five times higher and growing. Thus, consumers are not willing to pay the higher premiums that manufacturers pass on through their prices. His research shows that a partial solution is for consumers to buy first party insurance at much cheaper rates. He argues that the expensive third party rates are due to inefficiencies of the tort system--the high administrative costs and the cost of excessive rent-seeking on the part of the attorneys.

²⁸ Weber, Nathan, "Product Liability: The Corporate Response", 1987, New York Conference Board, pp 4-7.

²⁹ McQuire, Patrick, The Impact of Product Liability, New York: Conference Board, 1988.

³⁰ Priest, George, "The Current Insurance Crisis and Modern Tort Law," Yale Law Journal, 1987, pp. 1521-90.

Priest, George, "The Modern Expansion of Tort Liability: Its Sources, Its Effects, and Its Reform," Journal of Economic Perspectives, Vol. 5, November 1991, pp. 31-50.

Glenn Parr, former General Counsel for Piper Aircraft Corporation, proposes a similar solution.³¹ He suggests that pilots and aviation personnel increase their insurance to appropriate levels (higher than today's standard policies) to cover the costs of accidents. These two groups are primarily responsible for the majority of aviation accidents based on Federal Aviation Administration findings. If the responsible parties carry adequate insurance, there is less incentive to engage in "fishing expeditions" based on uncertain liability claims against manufacturers in hopes of finding deep pockets. If those who are primarily responsible are required to carry appropriate levels of insurance, then the insurance market through its price structure will motivate them to maintain a high level of competence and thus reduce the accident rate. Parr points to the turbine powered business aircraft market as proof of this concept.³² These aircraft often cost several million dollars, so banks and owners provide adequate insurance to protect these expensive investments. Piper's Cheyenne turboprop aircraft (current price of \$4 million) has yet (as of 1992) to result in a lawsuit. Piper attributes this to good maintenance and extensive training that is required under federal regulations and mandated by the insurance companies.

General Aviation manufacturers see a direct link between the move toward strict liability and the increased number of lawsuits. Under a contributory negligence standard, consumer misuse would tend to void plaintiff recovery and reduce lawsuits. The idea is simply that if a consumer misuses a product despite warnings or "common sense", they are proceeding at their own risk. Posner and Landes (1987) discuss this issue, but leave themselves an out. First, they acknowledge that "out of solicitude for the consumer" the law may abolish all defenses based on victim fault (social insurance). They reason that this

³¹ Discussion with Glenn Parr, General Counsel for Piper Aircraft Corporation, Summer 1994.

³² Parr, Glenn, "Legislative and Administrative Issues Impacting General Aviation Growth," paper presented at the 1992 FAA General Aviation Symposium.

is only slightly less efficient and imply that it only has minor costs. The basis of this assumption rests on the idea that few people will misuse a product so the defendant must be negligent in the majority of the cases. The downside is this concept relieves all consumers from taking due care. Now, Posner adds that if the fraction of extraordinarily careless consumers is not so small, then this defense did not apply, since they are now normal consumers who should be protected from an obviously dangerous product³³. The problem with this logic is that by allowing the original small minority to be compensated, we reduce the incentive for the rest to take reasonable care. The manufacturer must then either make the product "idiot-proof" or pay huge liability costs. This places the manufacturer in the position of insuring against all foreseeable and unforeseeable misuse.

Piper's former General Counsel, Glenn Parr, believes there is a basic disconnect between the efficiency theory and reality. He writes that:³⁴

In the real world there are two issues: how high are the damages and who has the money to pay them. The reason is simple. While legal theory is molded by the reasoned evolution of judicial thought, the actual practice of law is in the hands of the lay juries shocked by inflammatory photographs, saddened by the compelling personal tragedies, confused by a parade of expert witnesses, and required by the judge to place a monetary value on subjective losses. The judges who are supposed to apply the law are all too willing to "let the jury decide," particularly in the many states where the jury pool and the electorate that decides whether the judge keeps his job are the same.

³³ Landes and Posner, *The Economic Structure of Tort Law*, Harvard University Press, 1987 pp 300-301.

³⁴ Parr, Glenn, "Legislative and Administrative Issues Impacting General Aviation Growth," 1992 General Aviation Forecasting Conference.

This simply states one critique of strict liability, that it allows juries to use the court system as a means of social insurance. The juries see the obvious loss to the survivors along with the suspected wealth of one or more of the defendants. The jury then must decide whether to compensate the grieving plaintiffs or turn them away with nothing while blaming their deceased spouses or relatives for the accident.

Crew and Twight (1990) explain why the public and the potential litigants fail to take action to halt the rent-seeking in the current system:³⁵

When rent-seeking interest groups cause changes in the law that increase the transaction costs of political resistance by the taxpaying public, thereby reducing the already minimal incentives of rational voters to become informed and politically active, they increase the margin by which total societal costs may exceed the total benefit of particular fiscal programs. . . . Parties interest in precedent may be a powerful incentive to litigate inefficient rules where the parties expect to have an ongoing interest in similar cases in the future . . parties with an ongoing interest in precedent in a common law field such as contract law often will not know which side of the dispute they will be on the next time they come to court, greatly reducing the incentives for potential litigants to support transaction cost augmentation in a common law context.

Crew and Twight make the point that the public is not merely being fooled, rather they are rationally politically inactive due to changing transaction cost constraints. The information and organization costs to change the judiciary or federal laws are quite high for the average, unorganized citizen or business. The authors use Williamson's theory (1985) to analyze the transaction costs. Like Williamson, Crew and Twight consider bounded rationality, opportunism and asset specificity. They note that at the local or state level, firms can avoid

³⁵ Crew, Michael A. and Charlotte Twight, "On the Efficiency of Law: A Public Choice Perspective," Public Choice 66, pp. 15-36, 1990.

unfavorable rules or regulations by moving, but at the federal level they have no where to go (other than leave the country). This is extreme asset specificity which special interest can take exploit. Opportunism exists due to the special interests who take advantage of the firms bounded rationality. They conclude that under this governance structure, the laws and rules will be less efficient than other possible rules. In this situation, Rowley (1988) offers one mechanism to reduce the rent-seeking by the individual legislators.³⁶ He recommends a structure with much tighter party discipline, where the member's re-election would depend almost entirely upon party membership. Rowley feels this would reduce the individual legislators power and thus his ability to cater to special interest groups.

Market for Lawyers

In the theories described above, there is little mention of the realities of the administrative costs or the structures of the legal system. Yet, the structure and the attorneys who operate within it play a major role in driving up the costs of litigation. As discussed in Chapter 2, the Chicago School traditionally ignores structure, yet it is this structure that contributes to the rent-seeking that is driving up liability costs.

Our democratic legislatures along with their court systems allow the legal profession to adjust the system to increase rents to themselves and their interest groups. Lawyers are over-represented (compared to the general population) in most legislatures and obviously in

³⁶ Rowley, Charles K., "Rent-Seeking in Constitutional Perspective," The Political Economy of Rent-Seeking, Eds., Rowley, Tollison and Tullock. 1988.

the court system.³⁷ Lawyers predominate in the legislature because they can efficiently combine legislative service with their primary occupation--practicing law. They have the most to gain by allowing for easy litigation through a move to strict liability. Their large presence in legislatures as shown by McCormick and Tollison (1981) and obvious expertise with the law gives them the ability to control the law and the courts to increase their rents.

Wagner³⁸ points out that government is not some "unified being with selfless dedication to economic stability" but rather "a collection of individual politicians . . . (that) seek to craft policies that they think will enhance their electoral prospects." Thus we should view all government actions, whether legislative, executive or judicial, with some suspicion that there might be motives other than efficient public policy.

The shift from a negligence or contributory negligence toward a strict liability standard has opened the door to opportunistic behavior. Prior to this, plaintiffs faced the prospect of demonstrating the defendant's negligence as well as proving their own absence of negligence. This was a formidable barrier which deterred frivolous cases and cases where the plaintiff obviously was at fault. There was no liability without fault. Under a negligent standard, a plaintiff needed a relatively strong case before most attorneys would be willing to invest any resources or before attorneys would risk their reputational capital by taking a weak case before the court. Under strict liability, the plaintiff's negligence no longer bars recovery since the burden of proof shifts to the defendant--guilty until proven innocent. Thus, this removes the previous barrier of bringing most frivolous cases or ones in which the plaintiff was obviously negligent.

³⁷ McCormick and Tollison, Politics, Legislation and the Economy, Chapter 5, pp. 79-100.

³⁸ Wagner, Richard E. "Political Business Cycles." in Elgar Companion to Austrian Economics, p. 425.

Contingency fees represent a key structural characteristic of the legal system that allow for increased rent-seeking by the legal profession. Lawyers can not simply target firms for lawsuits merely to gain their wealth. Instead, they must find a client who might have been harmed by that firm and seeks redress. Prior to contingency fees, clients would have to advance a large portion of the expected costs of bringing the suit to trial. This type system effectively deters lawsuits, since most individuals will not risk their personal funds to take on large firms and their legal staffs with a weak case.³⁹ Adding to the law firm's problems was a professional restraint that prevented them from openly advertising for clients. Obviously, it was in the best interests of the manufacturers and potential defendants for this system to remain intact.⁴⁰ With the move toward a contingency fee system, this allowed more potential plaintiffs the opportunity to seek damages in the court system. To take advantage of this, attorneys lobbied their prospective bar associations to allow for advertising, something that had previously been banned as unethical. Law firms still had to be judicious in their choice of cases under the negligence standard, since the burden of proof rested with the plaintiff and a lost case could be expensive.⁴¹ The solution to this problem which restricted rent-seeking was to move from a negligence standard to a strict liability standard.

³⁹ Theoretically, if a plaintiff had a good case, there might exist a market where one could borrow money against this future expected award. In reality, banks would not loan money without collateral against the future probability of a favorable judgment.

⁴⁰ An obvious public choice question is why the potential victims didn't invest in protection against the alleged rent seeking behavior. I would offer that the current legal structure as I describe it is controlled by the legal profession to such a degree that attempts to limit rent seeking litigation were difficult to achieve.

⁴¹ Kelley, William P., "The Product Liability Maelstrom from the Point of View of an Expert Witness," The Aviation Consumer, Sept. 1991. Mr. Kelley runs an aviation technical consulting firms that provides expert testimony in aviation lawsuit. He notes that cases with large possible awards typically involve large up front expenses, so law firms are rather judicious about which clients they choose to support on a contingency fees basis. He states that many firms require up front funding of the initial background investigations, court filings, depositions and tests.

Lawyers receive rents by bringing cases against other's wealth. In this situation whether they are the plaintiff's lawyer or the defendant's lawyer the result is the same--they can receive a wealth transfer from the defendant and possibly from the plaintiff. The lawyers through court decisions and legislation provide themselves with a favorable regulatory and legal environment to transfer wealth to themselves. This is a great weakening of property rights over personal and corporate wealth. Due to the great cost of defending against these attacks,⁴² many individuals and firms find it less costly to settle out of court rather than face the possible higher costs of a major court verdict⁴³ or just the costs of going to court.⁴⁴

When faced with a lawsuit, the defendant has little choice but to defend himself at significant cost through another lawyer. The legal community has used its power with the legislature and judiciary to effectively create a legal structure that blocks entry--thus they have created a protected monopoly whose gates are guarded by the judicial system. Though a non-attorney may try and defend themselves in court without a lawyer, one is quickly at a disadvantage. The myriad of rules and procedures developed by lawyers and approved by the courts effectively stops almost all attempts to circumvent their entry barriers.

One recognizes this situation as the monopoly power gained by a special interest group through favorable regulation and agency oversight. The trail in this case is obvious. The

⁴² Discussions with Piper's former General Counsel, E. Glenn Parr. June 1994. Mr. Parr notes that Piper averages almost \$500,000 per case in legal expenses not counting any settlement.

⁴³ The manufacturers fear large award such as the Teledyne Continental case that awarded the plaintiffs \$107 million dollars. Connes, Keith. "Product Liability," *Plane and Pilot*, September, 1994.

⁴⁴ Cooter, Robert and Thomas Ulen, *Law and Economics*, HarperCollins Publishing, 1988, p. 486. The authors demonstrate that nuisance suits can be quite profitable if the expected trial costs to the defendant are higher than those for the plaintiff. In these cases, it is less costly for the defendant to settle. Thus, this encourages nuisance lawsuits which creates wealth transfers to the legal profession.

legislature has a relatively high percentage of attorneys compared to the general population. The number of attorneys has steadily increased over the last thirty years.⁴⁵ As their numbers rose, the market for their goods under the old system was rather fixed. By changing to a strict liability system, this created new opportunities for legal services and cases.⁴⁶ Thirty years ago attorneys were dependent on walk-in business or established firms with retainer contracts while maintaining a low-key, professional image. Today, lawyers openly advertise in the media for clients. Advertisements entice prospective clients by claiming almost anyone can receive a settlement--even if they were at fault. As the number of attorneys grew, many more entered politics in state and national legislatures. As with any organized group, they lobbied for favorable legislation, which now was easier since many attorneys dominated the key judicial committees in these legislative bodies.⁴⁷

This ability to control the transfer of wealth reverts the private property wealth of the populace into a "commons." Since the attorneys and their clients do not own the defendants wealth they do not share in the responsibility for its long term growth or survival. One might argue that the attorneys for the defendant do just that--attempt to protect the private wealth of the firms and citizens. The defense attorneys have the incentive to defend their client up to the limits of the client's wealth--after that there is not money left to pay their fees. The plaintiff's attorneys obviously hope to maximize the

⁴⁵ Statistical Abstract of the United States, 1992. The number of lawyers increased by over 20 percent during the 1980s.

⁴⁶ As a comparison, Japan has relatively few lawyers per capita and a much smaller number of lawsuits per capita. In the Japanese system, the number of new lawyers per year is limited by the Justice Ministry to just 1000, which represents a 3 percent pass rate on the bar exam. In Japan there is one attorney for every 6,600 people versus the United States where there is one for every 300 people. In Japan the legal system limits the number of lawyers in order to maximize the wealth transfer to a few chosen attorneys. In the United States, there is relatively easy entry into the profession, so wealth transfers can only be maximized by increasing the size of the market.

Jordan, Mary, "Japan's Paper Chase a Grueling Marathon," *The Washington Post*, February 14, 1996.

⁴⁷ Tollison, Robert, "Public Choice and Legislation," Virginia Law Review, 1988, pp. 339-368. Tollison shows that committees are the primary sources of legislation and regulation, so the legislators that control the key committees have the most power in those areas.

amount of the award or settlement. Neither side has an overwhelming incentive to protect the public wealth or promote the public interest.

The attorney's primary financial incentive is to maximize his fees from litigation. This can only be done by increasing billable hours, increasing the number of plaintiff suits or increasing the size of the individual award. These can all be accomplished by supporting a structure or standard that increases litigation and access to greater wealth. The move from contributory negligence to comparative negligence or strict liability increases the number of lawsuits the plaintiff negligence no longer bars recovery. Comparative negligence along with joint and several liability allows access to the manufacturers' wealth which increases the size of the awards. At the same time, the move to allow advertising and the adoption of the contingency fee structure also increases the attorney's access to potential clients.

To see how the type of liability structure affects the lawyers' income and thus the market for lawyers, a simple model can be used. Using the four basic rules for liability, we can see how this affects the tertiary costs and the potential income for the attorneys. In Table 6, I consider these four rules and their affect on the award and the lawyers' income as well the information problem. In the first case, no liability, the outcome is simple--no lawsuits. This provides little incentive from a liability viewpoint for the manufacturer to invest in safety and no source of income for the legal profession. The second case considers contributory negligence where the plaintiff is barred from recovery if the $y \geq y^*$ or $x < x^*$. Here the information costs are higher since the levels of care must be determined, We can assume that the plaintiff will lose many cases due to personal negligence. Thus, the available award to the attorneys is less than all that is potentially available. If we assume a contingency fee arrangement where the attorneys receive one third of the damage

Table 6. Effect of Liability Rules on Lawyer's Fees

	No Liability	Contributory Negligence	Comparative Negligence	Strict Liability
Plaintiff must prove:	Nothing	$y < y^*$ and $x \geq x^*$	$y < y^*$ and x	Nothing
Defendant must prove:	Nothing	$y \geq y^*$ or $x < x^*$	$y \geq y^*$ or $x < x^*$	Nothing
Information costs	None	Must determine x and y and damages	Higher, more cases and must determine x & y damages and $x:y$ negligence ratios	Less since no need to determine care levels, just damages.
Potential Award to Plaintiff & Lawyers	None	Rel. low since $x \leq x^*$ bars award.	Higher, since there are more cases and partial plaintiff recovery	Highest, since the most cases and defendant always guilty.
Lawyer's contingency Fee	0	$(1 - P) D \frac{A}{3}$	$D \frac{A}{3} \left[(1 - P) + P \left(\frac{d}{d + p} \right) \right]$	$\frac{A}{3}$

P is probability of plaintiff's negligence.
 D is probability of defendant's negligence.
 A is plaintiff's damages being claimed.
 $d/(d+p)$ is the defendant's negligence ratio.

award, the expected fees to the lawyers is one third of the damage award times the probability that the defendant was negligent times the probability that the plaintiff was not negligent.

Under contributory negligence, the plaintiff can now collect some award damages. This raises the information costs since the jury must now determine the degree of negligence on the part of the plaintiff and what percentage of the damage it caused. This increases the expected award to the lawyers since they get the same expected contributory negligence award plus some ratio of the award previously lost due to the plaintiff's negligence. Finally, under strict liability, the defendant is liable for all damages which reduces the information costs, but awards full damages to the plaintiff, a third of which goes to the plaintiff's attorneys.

The key insight here is that the lawyers receive the most income under the strict liability system according to this model. Thus, it should not be surprising that the legal profession supports the move away from contributory negligence toward strict liability. The only time the model shows equal fees to the plaintiff's lawyers is when the defendant is always negligent ($D=1$) and the plaintiff is always innocent of any negligence ($P=0$). If the situation is the one alleged by general aviation advocates of high levels of care on the part of the defendants (D near 0) and negligence on the part of the victims (p nearer to 1) then the lawyer's fees are very small under contributory negligence with the largest amount under strict liability.

This simple model considers only the plaintiff's attorneys, but the defendants' attorneys would also find this move toward strict liability profitable. If we assume the defense attorneys are on a billable hours basis, the defense costs rise as the number of cases

increase and as the information costs rise. For these four types of liability standards, the number of cases rise as one goes from no liability to strict liability. Additionally, the amount of information rises (and the cost of discovery) as one goes from no liability to comparative liability. The information costs moving from comparative to strict liability are unclear since the status of *x* is no longer an issue, but the lawyers will try to minimize awarded damages for the increased number of cases.

As a background for this model, Table 7 provides some data on the trend of legal services and court activity.⁴⁸ The data shows that gross revenues for all legal services rose by 123 percent during the 1980s while the number of lawyers increased as well as the number of cases filed in U.S. District Courts (civil cases). This provides some evidence of the growing number of entrants into the legal profession and the wealth transfers available in the form of billings for legal services.

Table 7. Data on Legal Services and Court Activity

	1970	1980	1990
Gross legal services revenues (\$BY 1980)	n/a	\$31.2B	\$69.7B (+123 %)
Number of Lawyers	n/a	542,000	735,000 (+ 36%)
Number of civil cases filed in Fed. District Court	87,300	169,000	218,000 +29 %)
% of Cases that made it to trial in Fed. District Court	10%	6.5%	4.3% (15 % drop in cases reaching trial)

⁴⁸ Statistical Abstract of the United States 1992, US Department of Commerce, Economics and Statistics Administration, Bureau of the Census.

Impact of Judicial Structural Rules

In the previous chapters I mentioned how the legislative structure aids in supporting the rent-seeking behavior of the legal profession. I have also shown why the lawyers may want to see a movement toward strict liability. However, this can not happen without the help of the judges, juries and their decisions. The judges have their own structural rules that allow them to control the direction of the equilibrium. Under the concept of *stare decisis* or precedent, judges' decisions are guided previous court decisions. Thus, under the principle of precedent, judges should reach the same holding that other judges have made under similar circumstances for cases with similar facts. To do otherwise, the judge places himself at risk of being overturned by a higher appeals court. Judges can through minor changes in interpretation or different presentations of evidence slowly shift toward a different legal doctrine. Thus, given the right cases and facts, the judge could shape the direction of the law. At the same time, special interest groups can accomplish the same outcome by carefully selecting the types and order of cases to be presented before the court. Thus, adherence to *stare decisis* ensures that the evolution of legal doctrine will be path dependent.

Maxwell Stearns (1995) offers a new insight into this control over the evolution of case law.⁴⁹ Most substantial changes in case law are made at the appeals court or supreme court levels. Yet, the judges have little or no control over what cases are initially filed by litigants. Depending on the type of case, the judges may also have little choice over whether they must hear and rule on a case. However, under the principle of standing, they may refuse to hear certain types of cases. Thus, having veto power, the judges can control

⁴⁹ Stearns, Maxwell, "Standing and Social Choice," University of Pennsylvania Law Review, Vol. 144, December 1995, pp. 310-459.

the direction of the path dependency and either help or hurt the cases presented by interest groups. This does not provide evidence that judges purposely altered (or tried to alter) the path of tort law to enrich the legal profession, but it does show that judicial structure allows for such an occurrence. Hence, this is another example of the importance of structure-induced equilibrium as suggested by Shepsle and Weingast (1981).

Chapter Summary and Conclusions

The broad overview of this research is that special interest groups together or separately can attack the wealth of certain industries through rent-seeking and cause the industry to decline. This chapter provides an explanation of how the legal profession, starting from tort theory based on theoretical efficiency, helped create a litigation structure that enhances rent-seeking. In theory, these liability rules may be efficient, but in practice, they fail to take into account the rent seeking motives of the lawyers that administer the legal system. Looking at this market for lawyers, I demonstrated what rules and actions are needed by the legal system and its participants to increase their rents and this matches what we see today in the court system. The concepts of contingency fees, liability rules, access to court services, the control of legislative and judicial agendas all demonstrate the importance of the structure and rules for effective rent-seeking.

In the next chapter, I provide evidence of how this rent-enhancing structure is applied against the general aviation industry. This approach to tort law has failed to significantly improve safety and how instead it has stalled progress on safety innovation.

Chapter 5. The Impact of the American Liability Structure On General Aviation.

In this chapter, I present data describing the effect that increased liability costs have had on this industry. I begin with a quick analysis that illustrates the potential costs that strict liability would impose on the manufacturers. This is followed by an overview of recent cases illustrating the problems faced by the manufacturers. The second half of the chapter discusses the industry response to the increased liability costs and makes a comparison to what the efficiency theorists would predict. The result is that safety has not improved significantly, innovation has decreased and production has dropped dramatically.

Liability and Long-lived Products

In the aircraft market, it is not uncommon for aircraft to last forty or fifty years. When an accident occurs due to a malfunction or failure of a part on an older plane, it is difficult to trace the cause back to the original manufacturer or to consumer/maintenance misuse or abuse. This long useful life created a large inventory of aircraft that represented a lengthy liability tail for manufacturers. Recent solutions involve placing time limits on bringing law suits. In 1994 the Congress passed the General Aviation Revitalization Act which limits the liability window for small aircraft to eighteen years from the date of manufacture. Posner and Landes could argue that this is inefficient since it reduces Y^* for the

manufacturers. Basically, the manufacturer is not liable for the product during the second half of its useful life. In theory, they could "under-design" the product to save money which might cause it to fail during this second half of its useful life.

Without this 18-year limit, the manufacturers face a problem. The better they design the product, the longer it will last. Eventually, some component will fail if not properly maintained or if the product is abused. Thus, the manufacturers must either stipulate a mandatory replacement or obsolescence date or keep improving the product (which further extends its service life)--thus increasing the probability of accidents due to misuse. Mandatory "retirement" dates must be set early so that statistically, the probability of failure is low. This is very costly since you are throwing away much of the useful life of the product and significantly raising the cost of its use. Improving the product durability increases the total number of products in the market for which consumers can eventually sue thus increasing your liability exposure. The cost-benefit analysis must consider whether the gains from having a more reliable airplane (because it is younger on average) exceed the cost of the early retirement.¹

Cost of Liability and the Industry Response

The Institute for Civil Justice, established within the RAND Corporation, performs analysis and research on the American civil justice system. In 1988 they published a report detailing damage awards resulting from aviation accidents.² Though the study primarily

¹ I must state that with today's high level of maintenance and inspections, older aircraft are not significantly less reliable than new ones if proper maintenance and upgrades have been performed.

² King and Smith, "Economic Loss and Compensation in Aviation Accidents," RAND Corporation, The Institute for Civil Justice, R-3551-ICJ, 1988.

focused on commercial aviation accidents, it did provide insight into how awards are calculated and awarded. The study concluded that victims typically received only 30 percent of their economic loss with men receiving the most and women and foreigners receiving the least. On average, the authors calculated the full economic loss at \$1,400,000 with actual average compensation at \$360,000 (1988 dollars).

Using these figure we can bound the problem for the manufacturers. If we use the manufacturers' estimate³ that an average accident costs \$500,000 to defend (not including any assigned damages), we can compute the economic problem they might face (Table 8):

Table 8. Potential Liability Exposure for General Aviation

Liability Year 1993⁴

Number of fatalities	715	
Number of fatal accidents	385	
Number of total accidents	2022	
Liability base in terms of active aircraft	168,000	(potential accident aircraft)
Probability per flight of a fatal accident	.00000012	(based on 1993 flight statistics)
Full economic loss to all victims	\$1,001,000,000	(based on RAND analysis, \$1988)
Average compensation from RAND Study for all	\$257,400,000	(If paid, \$1988)
Defense costs (no damages)	\$192,500,000	(total for industry for all possible cases)
Gross Sales 1993	\$76,590,000	(total for piston industry)

³ Martin, R. "General Aviation Manufacturing: An Industry under Siege," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 478-499.

⁴ Additional data from Aircraft Owners and Pilot Association data, February 1995, and from the Federal Aviation Administration, Statistics and Forecast Branch, Washington D.C.

The studies mentioned previously indicated that victims' survivors attempt to sue in almost all cases. If we use the average defense costs per case we see that gross sales are less than half of the estimated litigation costs--and this is before we consider damages or insurance costs. Critics would quickly point out that not everyone sues, yet just by looking at the gross sale it is obvious that the manufacturers lack sufficient revenue to cover even a fraction of their potential liability expenses. It is also obvious that the firms lack sufficient revenue to cover damages either based on average compensations or RAND's definition of full economic loss under strict liability designation of responsibility. The problem for the manufacturers is that the revenues used to cover today's lawsuits are generated from new aircraft sales, not from the sales of the aircraft involved in most of the accidents. This means that manufacturers must cover the expected future liability costs for the new planes as well as pay for those of the old aircraft.

The durable market makes a major difference to this market's liability costs. If the product was less durable, the situation changes drastically. Using the data from 1993 above and the RAND numbers for losses, we can compute what the expected costs would be if the firms only had to cover the liability costs for the current year's production. If we assume that the new aircraft operate at the same rate as the fleet and have the same accident rates, we get the results in Table 9. This shows that if the manufacturers produced a short-lived product, then their revenues would be adequate to cover the expected liability costs for those units. This assumes the aircraft only last one year which is unrealistic. If we assume a 30 year life, we can make a rough estimate of the present value of the funds needed to be set aside to cover the liability. For simplicity, I assume that there is zero inflation and that all aircraft survive the full 30 years flying the same number of hours per year with the same accident rate. This means that each year, the firms would have to pay

Table 9. Liability Costs Based on 1993 Production

Liability Year 1993	
General Aviation Production	964 aircraft ⁵
Pro-rated flight hours for new aircraft (140 hrs each)	143,782 hrs.
Accident rate	1.584 per 100,000 hrs.
Estimated number of accidents	2.135
Fatality rate	2.94 per 100,000 hrs.
Estimated fatalities	3.96
Defense costs	\$1.1 million
Average compensation (RAND est.)	\$1.44 million
Full RAND compensation	\$5.6 million
Gross sales 1993	\$76.59 million

\$1.1 million in defense costs and possibly pay damages of \$1.44 to \$5.6 million. Assuming 5 percent as the discount factor, this means they have to place in escrow \$17.1 million for defense costs and \$22.4 to \$87.3 million for potential damage awards to cover all fatalities. This in itself might be feasible if the manufacturers were not also defending against potential lawsuits for the other 175,000 active general aviation aircraft in the industry's liability tail.

If we accept RAND's numbers for the losses incurred in an accident, this shows that even a relatively safe product must generate considerable profits and or sales in order to cover even a small number of accidents if one is held to a strict liability standard. General aviation demonstrates what happens as the industry confronts the situation. They can not simply raise prices as suggested by the jurists and spread the costs since the higher prices

⁵ For this example, I am using the total general aviation production figure, but the actual number of single engine piston aircraft is several hundred less than this number.

reduces sales.⁶ With three to four hundred fatal accidents per year, this equates to a "litigation surplus" of \$150-200 million in potential fees for defense and plaintiff attorneys even if the manufacturers are innocent.

Robert Martin (1991)⁷ claims that this "bounty" is irresistible to the legal profession. He writes that:

"the fundamental problem with strict liability--allowing the courts and lay juries to judge the product rather than the conduct of persons who may have caused or contributed to causing an accident--is exacerbated by the unconstrained behavior of lawyers in and outside the courtroom."

Further, he notes that the courts and judges have also taken advantage of the system. He offers that judges should not be creating a version of social insurance through product liability, that the redistribution of wealth should not be the judges prerogative and that the courts should enforce the laws as they are written, not according to judges personal desire to effect "socioeconomic objectives." In a critique of Martin's paper, John Williams Jr. notes that the main purpose of product liability lawsuits are pure rent-seeking for the plaintiffs' attorneys since the plaintiffs on average receive one dollar out of every six (based on Martin's research) expended by the manufacturers in those cases.

⁶ Supporters of Shavell might offer that the system is working, since the alleged tortfeasor is reducing his level of activity (sales of new aircraft). The problem is that the reduction is in new sales and these are not the aircraft involved in the majority of the accidents. Furthermore, the accidents are typically caused by negligent pilots. The number of pilots and flight activities have decreased, but it is not necessarily due to safety concerns, but rather due to increased costs.

⁷ Martin, R. "General Aviation Manufacturing: An Industry under Siege," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 478-499.

A Narrative Approach

General aviation has suffered many verdicts that on the surface appear to be questionable. By this, most critics usually are referring to the pilots gross negligence in causing the crash. Judge Rosenn states that a goal of strict liability is to place the burden of loss on the aircraft firms since the victims are supposed to be powerless to protect themselves.⁸ This might be true if the crashes were caused by aircraft design or manufacturing defects, yet FAA investigations continue to show pilot error as a major cause of accidents. The theory goes on to claim that the manufacturer can better absorb the loss through their ability to pass the costs on to all consumers of his product. Unfortunately, the manufacturer may not be able to financially absorb the loss due to the high cost of the litigation and low revenues. Second, Judge Rosenn writes:

If contributory negligence is ignored in determining the extent of plaintiff's loss, then the future cost of the manufacturer's product will be artificially inflated and will not accurately represent the actual risk posed by the defective product. Although individual plaintiffs may benefit from the immunity currently given for their contributory negligence, the consuming public at large may be adversely affected.

I would add that when the plaintiffs receive only one out of each six dollars expended by the manufacturer (Martin, 1991), this increases the adverse effect on the public. The following cases represent how the manufacturers have fared under the current liability environment.

⁸ Murray v Fairbanks Morse, Unites States Court of Appeals, Third Circuit, 1979, 610 F.2d 149. Cases and Material on Law and Economics.

Cleveland v. Piper

Cleveland v. Piper Aircraft has received the most attention in the general aviation community.⁹ In this accident, which took place in 1983, Edward Charles Cleveland was a documentary producer and pilot. He was making a short television commercial about gliders and wanted some additional footage showing the glider in various phases of the launch, release and gliding portion of the flight. Normally, one would have a separate aircraft with a camera filming the glider and the tow plane. Cleveland, wanting to save money, decided to modify the tow plane so he could film while towing the glider and save the cost of a third aircraft. The towplane was a 1970 Piper SuperCub.¹⁰ The pilot (Edward Cleveland) had a mechanic remove the front seat of this small airplane to make room for a cinematographer and video camera with mounting tripod that would be shooting aft through the front side window. The tow plane was a small tail-dragger with one seat in front and one in back (tandem seating). The tail dragger design has been used since the early 1910s and is considered superior to tri-cycle gear designs for many utility applications.¹¹ The design does have one drawback in that it's difficult to see straight ahead. This requires that the pilot taxi in a zig-zag fashion to avoid obstacles and to carefully make sure the runway is clear prior to take-off. By removing the front seat and having a photographer squat with the camera directly in front of the pilot who was flying from the rear seat, this further restricted forward visibility while on the ground.

⁹ Cleveland v Piper Aircraft Corporation, Nos. 86-2112, 86-2265, West's Federal Reporter, Vol. 890 F.2d, 1990.

Cleveland v Piper Aircraft Corporation, Nos. 86-2112, 86-2265, West's Federal Reporter, Vol. 898 F.2d, 1990.

Cleveland v Piper Aircraft Corporation, Nos. 91-2065, West's Federal Reporter, Vol. 985 F.2d, 1993.

Cleveland v Piper Aircraft Corporation, 93-17, The United States Law Week, Section 3, 62 LW, 10/93

¹⁰ Piper aircraft received certification for this type of aircraft back in 1937 and has built several modified versions of this design since.

¹¹ In this type of design, the plane has two front wheels and a third wheel under the tail. This causes the plane to sit nose high which blocks the pilots view.

The airport manager found out about the planned flight which he considered to be unsafe. Upon arriving at the airport, he announced the airport was closed and parked his van in the middle of the runway to prevent the plaintiff from taking off. The plaintiff hurriedly taxied to the runway and attempted a take-off knowing that the airport had been closed and that the runway was blocked. He hit the van broadside and suffered serious head injuries when his head impacted the camera. The photographer was not seriously hurt. He and his family sued the airport, the manager and Piper Aircraft in the New Mexico District Court (Edwin L. Mechem, Judge). The jury found that Piper negligently designed the plane without adequate forward vision from the rear seat and failed to provide a rear shoulder harness. The jury awarded the plaintiff \$2.5 million. The trial judge reduced the award to \$1,042,500 plus post judgment interest and costs to account for gross contributory negligence on the part of the plaintiff.

Piper appealed on several grounds. First, the pilot's actions were blatantly against Federal Aviation Administration regulations and common safety practices. The National Transportation and Safety Board investigators indicated that no design or manufacturing defect caused the plane to hit the van. Second, they offered that the aircraft met all existing FAA requirements when certified in the 1940s and that the reduced visibility was a known hazard. They further showed that the pilot had many years of experience and safety training in this type of aircraft and was well aware of this problem so it was a voluntary assumption of risk. Next, they offered that shoulder harnesses were not required at the time of manufacture nor by any subsequent Federal Aviation Administration airworthiness directive¹² on this aircraft. Piper added that the plaintiff could have easily installed them if

¹² Airworthiness directives are issued by the Federal Aviation Administration to correct deficiencies found in aircraft designs or manufacture. They are mandatory modifications that must be completed for the aircraft to remain airworthy and legal to operate.

desired at minimal cost. The plaintiff countered that crashes were a foreseeable hazard and that shoulder harnesses were an easy safety enhancement the manufacturer could have provided (the aircraft did have shoulder harness attachment points and shoulder harnesses were offered as an option, but the owner failed to buy them). The plaintiff provided expert testimony to show that even with the illegal camera modifications, a shoulder harness would have prevented his head injuries and he would have survived the crash with only minor injuries.

Piper's last major point was that the trial judge failed to instruct the jury to consider this accident as a first and second collision. They argued that Piper had nothing to do with the first collision (hitting the van and the actions that lead up to it) and minor negligence with the second collision of the plaintiff's head hitting the camera (due to the lack of shoulder harnesses). Their basic appeal was that the first collision represented the bulk of the negligence and that their share of the second collision was small. Thus, instead of being almost 50 percent responsible, Piper was instead only 5-10 percent responsible or less if at all negligent for the second collision.

The Tenth Circuit Appeal Court (Judges Logan, Lay, and Barrett) heard the case twice and eventually sent it back to the District Court in 1993 for a new trial (note ten years passed since the original accident). This case has been a key rallying point for general aviation for several reasons. First, the jury's decision overruled any protection based on Federal Aviation Administration certification. Second, the jury was allowed to "second-guess" the designers and certification procedures and create new requirements (shoulder harnesses) that were not required. Third, the initial judge failed to consider the fact that the plaintiff's disregard for safety and FAA rules caused the initial accident. Piper and several general aviation interest groups filed an appeal with the Supreme court in late 1993. The

Court accepted the filing, but the petition for a writ of certiorari was denied. In an unprecedented action, the Federal Aviation Administration has entered an amicus curiae¹³ (friend of the court) brief in support of Piper. In this brief they stated:

Congress has directed the Secretary of Transportation to establish minimum standards for aircraft that will best promote the development and safety of air commerce. . . This case concerns a state's power to impose, through the medium of common law tort action, its own substantive standards of care for aircraft design. As such, it raises issues that directly affect an area that is and has been one of paramount federal concern. . . In our view the federal government has exclusive authority over air safety, and the common law duty of care plaintiffs seek to impose on the defendant airplane manufacturer is therefore preempted by federal law. . . (Air commerce) cannot remain safe and continue to grow if every plane that rises into the airways is subjected to a multitude of different--and potentially conflicting--state standards of care.

This action by the Federal government is merely rent protection on its part. The Federal Aviation Administration and its related committee structure would lose their ability to collect rents and control wealth transfers if the states were allowed to usurp their authority. For the states, this would increase their ability to rent-seek by making it easier to target wealthy corporations currently protected by federal regulations. In keeping with rent-protection, a brief in support of the plaintiff has been entered by the Trial Lawyers Association. The lawyers want the states courts and juries to expand the legal profession's ability to rent-seek.

As discussed in Chapter 4, this case shows how defendants find themselves under a de facto strict liability standard if y^* is allowed to be changed by the courts. Prior to this

¹³ Brief for United States as amicus curia at 1-2, *Cleveland, et al. v. Piper Aircraft Corp.*, No. 9102065 (10th Cir. 1992.)

case, manufacturers argued that Federal Aviation certification established y^* . As long as the aircraft met those standards, the pilots were obliged to invest a appropriate level of care to avoid accidents. Under this paradigm, pilots were aware of available seat belts and the taxiing requirements and difficulties of tail wheel aircraft and thus had to increase x toward x^* in order safely fly. By redefining y^* after the fact, the judges and juries have effectively left the manufacturer in a situation similar to strict liability and reduced the incentive of aircraft pilots to invest in reasonable care. Additionally, this encourages rent-seeking by the legal profession since it opens the door to ignore aircraft certification as a defense establishing y^* for the manufacturer.

Daniel Cathcart represented the plaintiff in *Cleveland v. Piper*.¹⁴ He maintains that Piper was guilty and should have provided shoulder harnesses since they provided a large degree of safety at a very small cost. He stated that the tail dragger design in itself is not defective, but that it is unsafe for towing gliders since you can not zig-zag while towing a glider. I would note that the vast majority of gliders are towed by tail-dragger aircraft so his statement is questionable. He disapproved of the recent statute of repose on liability. He maintains that though this is sufficient time (18 years) to uncover manufacturing defects, design defects will not become apparent until the right circumstances present themselves.

¹⁴ Connes, Keith. "Product Liability," *Plane and Pilot*, September, 1994.

Teledyne Continental Motors

Teledyne Continental is one of the few remaining manufacturers of small piston engines for aircraft. The basic design has not changed for over thirty years, so the design is considered quite safe if proper maintenance is performed. In 1986, Robert and Susan Gross (both experienced pilots) and their two children crashed and burned during an instrument approach in bad weather into Smith Reynolds Airport in North Carolina. The National Safety Transportation Board did an extensive investigation and found no evidence of engine malfunction. The aircraft's engine had been remanufactured¹⁵ by Teledyne and the plaintiffs had previously complained about its oil consumption and that some of the auxiliary components were faulty. Relatives filed suit in 1993 against the aircraft manufacturer and the engine manufacturer claiming that the engine was defective. The suit against Beech was dropped, but the jury awarded \$107,300,000 against Teledyne Continental in compensatory damages. At the time, this was the largest award in aviation history. In a post-trial motion, the judge reduced the award to \$1.4 million. This was an important case to the legal profession since it demonstrated the possibility of very high awards.

Arthur Alan Wolk represented the plaintiffs in the Teledyne Continental case.¹⁶ He maintains that the manufacturers products are not as safe as advertised and litigation is necessary to force them to improve their products. He noted that in this case, there was a history of problems with the engines prior to the crash. The defendant had actually

¹⁵ A remanufactured engine is one that has been removed from the plane and returned to the manufacturer to be totally overhauled to new specifications. It will contain a mix of new parts, components overhauled to new specifications, and certified used parts. The engine will be reassembled, tested and then reinstalled in the aircraft.

¹⁶ Connes, Keith. "Product Liability," *Plane and Pilot*, September, 1994.

replaced the engine once after the initial remanufactured engine was found to be defective. The second engine began to exhibit the same problems and the defendant delayed in fixing the problems.¹⁷ He claims that Teledyne Continental's failure to immediately fix the alleged problem represented a cavalier attitude toward people's lives since even a minor problem that occurs in flight can quickly result in death. He notes that the large initial award was quickly reduced by the judge to a normal award, so no rules or ceilings on damages are needed.

In terms of tort reform, Wolk is opposed. First, he notes that if manufacturers would just fix the problems that are identified early on, they would have no problem with the statute of repose. He claims that they do not fix problems and will just stall until the statute applies. He said that "The manufacturers fix nothing, admit nothing and do not afford you sufficient information so that you'd know there's a problem existing in the airplane." Finally, he claims that any faith in the Federal Aviation Administration to properly certify a new aircraft or to identify problems before or after crashes is misplaced. He argues that Craig's theory (1991)¹⁸ that the FAA and National Transportation Safety Board is more efficient and effective than court verdicts is totally wrong. Instead he offers that changes only occur after litigation forces these problems to the surface and the government finally notices.

¹⁷ It was noted during the trial that the pilot continued to fly the aircraft with the alleged bad engine even after having the first one replaced and complaining about the second engine. If the pilot actually thought the engine was defective, he was the least cost avoider in preventing an accident by simply not flying the aircraft.

¹⁸ Craig, Andrew. "Product Liability and Safety in General Aviation," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 456-477.

I discuss this theory later in this chapter. Craig essentially maintains that there is not link between increased litigation and improvements in safety.

Piper and the Attractive Nuisance

In a more bizarre case, a Piper Navajo aircraft crashed on the northbound lane of a California freeway. Several hours later, a motorist on the southbound lane slowed to gawk at the crash and was rear ended, causing a major accident. Piper was sued (along with other defendants) by the motorist who caused the auto accident for its part in creating an "attractive nuisance."¹⁹ This case cost Piper almost a half a million in defense costs. Piper was targeted in this case due to its deep pockets and the possibility of joint and several liability.

Beechcraft Litigation Study

Piper Aircraft is not alone in this problem. In 1987, the House Aviation Subcommittee of the Public Works and Transportation Committee asked Beech to analyze all crashes involving its aircraft from 1983 to 1986 that resulted in litigation.²⁰ During this period, the National Safety Transportation Board investigated 203 crashes of Beechcraft airplanes.²¹ After lengthy investigations of each crash, they determined all were caused by either pilot error, weather, faulty maintenance or air controller mishaps. In not a single case did the National Transportation and Safety Board investigation cite Beechcraft's design or manufacture. Yet, plaintiffs sued in each case claiming Beechcraft was totally at fault with

¹⁹ Fernandez, et al. v. Ford Motor Company, et al., No H137 7488 (Alameda California).

²⁰ Martin, R. "General Aviation Manufacturing: An Industry under Siege," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 478-499.

²¹ It should be noted that the National Safety Transportation Board investigates every airplane crash that occurs no matter how small the aircraft. They have some of the best investigators in the world with years of experience.

claims averaging \$10 million per accident. During this period, Beechcraft had to spend an average of \$530,000 per case to defend itself. The troubling thing to liability critics and of course to the aircraft industry is that even when the nation's top experts absolve the manufacturer of blame, the system allowed lawsuits. Worse, in this example, the plaintiffs were found by the FAA experts to be excessively negligent in seventy percent of the cases.

Though the industry is paying out large amounts, the majority of the funds go to attorneys. Beech did a study looking at the period of 1971-1976. They spent over \$18 million insuring and defending against lawsuits. They carefully audited to determine their costs and how much went to plaintiffs' attorneys. The analysis established that out of the \$18 million that Beech paid for litigation, the plaintiffs only received \$3 million, or 16 percent of the total dollars Beech expended.

Who Bears the Cost of Excessive Litigation

A relatively large amount has been paid by the manufacturers, but this does not represent the total costs. First, the pilots themselves pay a very high cost for a new aircraft as well as high insurance rates. The low demand for new aircraft puts pressure on the used market, where prices are rising faster than inflation.²² The result is that the average age of the fleet increases since essentially no new aircraft enter to replace older ones. This raises cost of flying due to the higher maintenance needed to keep the old planes flying as well as legitimate questions about the safety of these old planes. It seems

²² Based on recent data from the Aircraft Bluebook Digest, edited by Fletcher Aldridge, Intertec Publishing, 1996.

reasonable that at some point the increased age of the fleet will compromise safety. There are other externalities caused by the decline of an piston engine sector of general aviation:²³

- Due to high prices, the U.S. went from being the world leader in exporting small aircraft to becoming a \$700 million dollar importer which increased the trade deficit by a like amount. (This includes some commercial aircraft.)
- The industry has suffered a large loss of jobs. Jobs in U.S. general aviation declined by 46 percent from 1986-1992 while those in engine manufacture fell over 74% during this period.
- The decline in sales from 1981 to 1992 of over 95 percent forced many manufacturers and sub-manufacturers to go out of business.
- The rise in the cost of aviation products caused consumers to switch to possibly more dangerous substitutes--home built aircraft.

The possibility that strict liability might lead to bankruptcy has been considered by jurists. Judge Ramsey noted that:

Society cannot make rational decisions concerning the allocation of resources unless the price reflects the true costs. When the price rises greatly, reflecting the fact the product produces either substantial direct costs or creates widespread externalities, it is rational to discourage or even abandon consumption of that product. Strict products liability thus allows the marketplace to make better informed decisions.

Again this statement makes the assumption that the plaintiff is innocent of negligence and that the product was defective. When the user is the least cost avoider as appears to be the case in the majority of aircraft accidents, the switch from negligence based liability to strict products liability causes undue and unfair damages to the manufacturers, forcing many out

²³ Fiduccia, Paul, "The Revitalization of General Aviation," presented at the 1993 Federal Aviation Forecast Conference.

of business. Charles Rowley (1990) noted that the principle consequence of this tort reform was:

. . . the placing into market jeopardy or market demise a whole range of products and services subject to some risk to the client and reducing the availability of such commodities by imposing a significant tax upon consumers levied, without representation, through the U.S. Courts. For the most part the new law has created a moral hazard, by encouraging negligence of a contributory nature, which poses a threat to the U.S. Economy. England lost a colony for less perverse behavior.

Innovation and Safety

Theoretically, strict liability is efficient because it provides an incentive to the manufacturer to improve the safety of its products. Thus, if this is true we should see evidence of innovation at least equal to Y^* which of itself provides increased safety. This has not been the case with general aviation.

First, rather than increase research and development, the firms have basically cut back or stopped. The reason is that the funds normally spent on R&D are now spent on insurance and legal expenses. Russ Meyer, CEO of Cessna Aircraft, estimated that Cessna spends \$25M or more per year defending lawsuits, the same amount they previously spent on research and development.²⁴ Though, they have not produced a single aircraft since 1986, they continue to get sued in almost every accident involving a Cessna. Due to the danger of increasing lawsuits, manufacturers incur high costs defending all

²⁴ *Washington Post*, 7 June 1994, pp. D1,6.

cases in an attempt to prevent even larger future awards. Companies report spending almost \$500,000 per case in legal fees, not including awards. With this type of unknown, small aircraft firms are having trouble attracting investors,²⁵ whose funds could be used for research and development and product improvement. Furthermore, suppliers of sub-components have either left the market or significantly raised prices to cover expected legal costs.²⁶ This means the aircraft firms often have to build subcomponents themselves in small, inefficient quantities to meet production needs.

Cessna has recently decided to reenter the market to produce three single-engine models of aircraft.²⁷ These aircraft will be slightly modified versions of their 1986 models--all of which were 20-30 year old designs in 1986. Most of the modifications will be minor cosmetics. The reason for this apparent desire to "freeze" innovation is the fear of new liability and recertification costs. The most recent example of what can happen if you try something new and innovative was the Piper Malibu which came out in 1984. It cost almost \$40 million to design and certify. After only a few years on the market, several accidents forced Piper to undergo an expensive re-certification with the FAA. The end result was a clean bill of health for the aircraft, but its reputation was marred and the doors were open for litigation in every accident that would ever occur involving that design.

²⁵ Discussions with Piper's former General Counsel, E. Glenn Parr. June 1994.

²⁶ A good example has been Gates Rubber, who make fan and drive belts for the automotive industry. Piper recently requested they supply a standard drive belt (a relatively small order of a few thousand) and they refused. Gate's legal staff determined that the cost of defending a single lawsuit would offset all possible future profits from sales of this type, so they refused to sell the belts.

²⁷ Cessna plans on producing the C-172 Skyhawk, the C-182 Skylane and the C-206 Stationaire in late 1996. "Cessna Boss Talks About the Future," Flying, August 1994.

Andrew Craig has researched the effect of litigation on general aviation and found an interesting trend.²⁸ He notes that though safety was improving, the onset of excessive litigation has stalled the improvement and that safety has remained relatively constant in recent years. This coincides with the evidence that manufacturers have stopped innovating as investment funds disappeared. Craig concludes that there is no correlation between improved aircraft safety and increased product liability. He also determines that there is no evidence to support the alternative hypothesis that safety would have been worse had there not been such litigation. He states that the only benefit the excess litigation may have served is to encourage pilots (potential plaintiffs) to gain more information on flight safety.

If we look at the accident data, we do observe a decrease in accidents. As shown in Figure 22, the number of accidents and fatalities per 100,000 flight hours has steadily decreased. Craig notes that beginning in the 1980s, the annual flight hours begin to drop and we notice a sudden change in the accident rate--it actually increased for a few years²⁹. The reduced flying rate does decrease the total number of accidents, which should mean flying is safer and thus produce fewer lawsuits. However, over the period from 1983-93, annual liability claims paid by manufacturers increased from \$24 million to over \$210

²⁸ Craig, Andrew. "Product Liability and Safety in General Aviation," The Liability Phase: The Impact of Liability Law on Safety and Innovation, The Brookings Institution, eds. Huber and Liton, 1991, pp. 456-477.

²⁹ Data for 1994 shows that the accident rate has actually increased compared to 1984. The fatal accident rate in 1984 was 1.51 fatal accidents per 100,000 hours while in 1994 it was 1.64 fatal accidents per 100,00 hours. During this 10 year period, hours flown dropped 33.8 percent while fatal accidents dropped 28.1 percent. AOPA Pilot, March 1996.

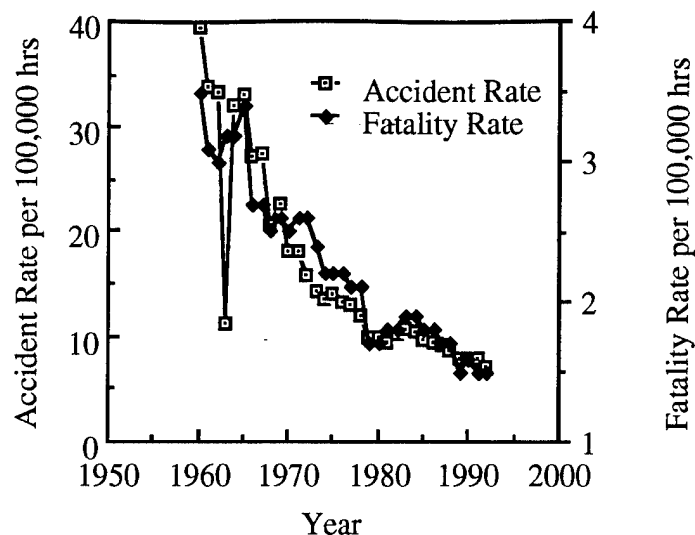


Figure 22. General Aviation Fatality and Accident Rates.

million per year as sales dropped ninety-five percent -- despite an improved safety record.³⁰ This shows that the growth in liability costs is not due to an increased number of accidents. Rather, the safer the industry's performance, the more it gets sued.

Craig also studied the link between accidents, liability claims and manufacturer changes. His work addressed the question of how did manufacturers respond to design or manufacturing defects or claims of defects. He used National Safety Transportation Board reports which provide expert opinions on aircraft accidents and the possible causes. In particular, he looked at cases where a defect was uncovered to see how the system reacted before and after the liability explosion.

First, he concluded that the Federal Aviation Administration does a good job of instigating changes in procedure, maintenance, and manufacture if necessary following an

³⁰ FAA Aviation Forecasts Fiscal Years 1994-2005, FAA APO 94-1, Section V, March 1994.

investigation finding of a defect.³¹ The Federal Aviation Administration issues airworthiness directives which require all owners of aircraft to have their aircraft inspected and or modified after a finding of a design defect. These airworthiness directives are not voluntary, so must be complied with in order to legally operate the aircraft and to meet insurance requirements. These airworthiness directives are normally issued immediately following a crash investigation which is usually prior to any litigation. The required actions are normally the responsibility of the aircraft owner, but the manufacturers sometimes pay for the required fixes. The other major conclusion is that the litigation outcomes have relatively few impacts on design or manufacturer changes. This may simply be due to the fact that airworthiness directives resulting from actual accidents are issued prior to the trials³². Another possible reason is that the Federal Aviation Administration's system of extensive rules, inspections, and certification procedures does a good job of ferreting out most problems and troubleshooting new designs. Thus, the report indicates that this is a case where the government actually appears to be more efficient than the tort system at improving safety. The major reason is that the government investigation and remedies are relatively quick compared to the court system.

With the rising costs of liability, what has been the industry response? The firms have either left the market, seriously reduced output and or frozen their basic designs. Prior to 1986, Cessna was the world's largest manufacturer of light single engine aircraft. After 1986, they abandoned production and concentrated on the light business jet market even

³¹ These investigations are not necessarily the result of accidents. Most problems leading to ADs are discovered during annual maintenance inspections or through pilot reports prior to accidents. All licensed mechanics must report signs of excessive wear or structural damage found during annual inspections. Thus, if the FAA notices that rudder cables on Cessna 172 aircraft are wearing out at a higher than expected rate, they and or the manufacturer will issue an AD making sure this component is carefully inspected at regular intervals.

³² The fact that the FAA and the manufacturers are quick to respond to potential problems makes the liability problem worse since this data is obviously available to the plaintiffs as evidence of past problems.

though they were still the leader. Their reason was quite simple. As the leader, the majority of aircraft flying were Cessnas and each one represented a liability time-bomb. Each new aircraft added to that cost while providing little contribution to profit. Piper, the number two firm, went into bankruptcy in the late 1980s and reduced production to almost nothing. The remainder produced a few dozen planes a year, mostly at the high-end of the price range (\$200K+). The reasoning here was that the more expensive planes were used by businessmen who carried better insurance and often were flown by professional pilots.

Manufacturers have essentially "frozen" the designs of their aircraft. First, established firms are producing so few per year that they can not recover the cost of developing and certifying a new design while servicing the current liability expense. Second, new designs offer the opportunity for design errors, manufacturing errors and more lawsuits should accidents occur. Proven designs have the benefit of having survived court challenges. This is why Cessna decided to start production with three proven designs from its past.

There is another side of the story where innovation has occurred. This relates to the home built or experimental category of aircraft which has become the substitute for new production aircraft. This industry started out as individuals designing and building their own aircraft in their garages. They would essentially design the plane, buy raw materials and spend several years constructing their planes. A few entrepreneurs began to sell plans for aircraft and then began to sell kits containing the raw materials. Eventually, the FAA adopted the "51%" rule which allowed firms to sell partially finished kits as long as the homebuilder still performed 51% of the work. Along with this came FAA certification and some oversight.

For years, these aircraft were small and relatively crude flying machines. But as liability costs soared in the 1970s, individuals and small firms began to design and build aircraft to replace the highly priced manufactured aircraft. These new planes used the latest construction and design technologies available to homebuilders. By the mid-1980s, these firms were producing kits for aircraft that rivaled and in many cases exceeded the aircraft produced by the industry while costing significantly less. The key was that these planes were still privately built (so kits prices do not include labor) and they contained relatively small charges for liability. Since the builder was responsible for the construction and safety of the plane, accident victims (usually the builder) could only sue themselves. The firms that provide the kits are usually small with shallow pockets and few existing aircraft in their liability tails, so self-insurance by the builders has proven most efficient.

At first this might seem like a good solution to the liability problem, but it's really a warped reaction to it. This is actually an inefficient solution to avoid paying high prices for new versions of old aircraft that contain a high tax to cover liability. Though many of these experimental aircraft are built by professional aircraft mechanics, there is a serious question about safety, quality of construction and long-term durability. Hence, this may be a more dangerous substitute than the hazard the strict liability jurists were trying to cure.

Additionally, few people have the skill or can afford to spend 2000-3000 hours to build a high performance aircraft. The type of professional buying these aircraft typically earn from \$50,000 to \$100,000 per year just to be able to afford the kit. If we value their time at what they normally earn, this means these aircraft cost an additional \$50,000 to \$100,000 in labor plus the cost of the kit which might approach \$75,000-\$100,000. Though this cost is still cheaper than a new production aircraft, it's still quite an expensive undertaking. I do not doubt that building an airplane provides valuable recreational utility,

but the opportunity cost of the thousands of hours invested just to acquire a plane for transportation is questionable. Further, one has to decide whether the possible cost savings balance the increased probability of an accident due to a design or construction error.

Several of the homebuilt firms have applied for certification under the new certification rules³³ so they may begin to sell finished versions of their kits.³⁴ These firms hope to fill the demand for new technology aircraft that the established manufacturers have avoided. Thus, the new certification rules may help the kit builders, but provides little relief to the established firms. The simple reason is that the established firms still have an uncertain future cost of liability for all of their past production. They face the very real possibility that the present value of future liability costs exceeds the present value of their future sales profits.

It appears that rent-seeking in support of these new regulations provides possible benefits to the new firms trying to enter the industry, but less to the existing ones. A new firm entering the industry has no liability tail and is in a better competitive position than the existing firms that have built planes for years. Previously, the high certification costs prevented entry, but now that cost has been decreased. The new firms' liability costs are lower since they only have to fund the expected future liability of the current aircraft they sell, while the established firms have to cover the costs of all aircraft they ever produced that are still flying.

³³ These new certification rules reduce the amount of testing and stream line the process, but also restrict the allowable uses of the new aircraft, one of which is prohibiting the new aircraft from carrying passengers for hire. These rules affect small aircraft that seat four passengers or less.

³⁴ Cook, Marc E., "Testing the Tomorrow-Think Theory," AOPA Pilot, January 1996.

On the other hand, the existing firms can be competitive if they can find a way to reduce their liability tail. This is exactly what Cessna accomplished through its support of the General Aviation Product Liability Reform Bill that was passed in 1994. The bill limits liability to 18 years for small general aviation aircraft. Since Cessna hasn't produced any since 1986 and their peak production ended in 1981, this removes well over half of their liability tail.³⁵ Thus, with a reduced liability cost and no certification costs for their resumption of production on old designs, they are hoping to again produce a competitive product on the market. The current market leader, Piper, continued to produce after Cessna stopped, so they keep a larger percentage of their liability tail, a disadvantage that Cessna will undoubtedly try to exploit. The passage of this bill and the actions of the competing interest groups are described in Chapter 6.

The Impact of Strict Liability Theory

The "Founders"³⁶ maintain that one reason strict liability works is that the manufacturers can pass along the cost of increased safety and innovation to the market in a slightly higher price. They are making the implicit assumption that there is no secondary resale market that can avoid the tax and thus compete with the new products. In the piston engine market, as the price rose due to the liability tax, this shifted demand down. This did not reduce liability costs, rather, the liability costs continued to rise which shifted demand even more. Now, a higher total tax is divided among a smaller number of units. This continues until firms either reach bankruptcy (Piper) or withdraw from the market (Cessna). It might be offered that if the liability costs drive firms out of the market, then

³⁵ "State of the General Aviation Industry," In-Flight, April 1994.

³⁶ This is Huber's term that he uses to describe the early proponents of strict liability.

their product was too dangerous in the sense that its price demand elasticity did not totally cover all relevant costs. Yet, in this industry, this merely shifted demand to the used market which provided little revenue to the original manufacturers to cover their liability. Without sources of investment funds to improve safety, there is little that manufacturers can do short of reducing their activity level.

Justice Kane notes in *Shepard v. Superior Court*³⁷ that it is not clear who bears the costs of strict liability or what the end result may be. In his dissent, he describes how consumers pay more, stockholders see their wealth decline, employees may earn less or lose their jobs and the public may be deprived of a socially beneficial product. He notes that:

Paying heed to economic realities rather than our own fancy, the courts as a matter of judicial policy must stop the further extension of the strict liability of entrepreneurs, at least to areas where the determination of damages is speculative and conjectural rather than real and definable. . . . In doing so, we are in line with established law which holds the manufacturer is not an insurer of the product and that the strict liability of entrepreneurs may not be equated with absolute, limitless liability. . . . in determining the parameters of enterprise liability we must draw a proper balance between the *need for adequate recovery and the survival of viable enterprises.

Thus, Judge Kane not only realizes that this dramatic shift in tort liability imposes heavy costs on firms, but that tort law should not be a universal insurance policy for the socialization of risk. This agrees with Huber (1988) who wrote that the shift in tort law

³⁷ *Shepard v Superior Court*, 76 Cal.App.3d 16, 142 Cal.Rptr. 612, Court of Appeals, First District, Division 2, 1977. Cases and Material on Law and Economics.

no longer answers the question of how to allocate costs of accidents between parties but rather:³⁸

How can society best allocate the cost of accidents to minimize all relevant costs and to provide potential victims with the accident insurance that not all of them currently purchase?

Mark Skousen maintains that we can judge the impact of shocks on a market and on wealth by their effect on quantity, quality and variety.³⁹ In this case, increased liability costs represent the shock. The efficiency proponents would offer that strict liability encourage safety innovation and a more efficient level of activity. What should we have seen in terms of Skousen's criteria if the current liability was efficient and welfare enhancing? Lets consider automobiles which Posner and Landes use as a success story:

Quality: Auto makers have introduced a multitude of safety features over the past several years. They include airbags, anti locking brakes, energy absorbing steering wheels, lap and shoulder belts, automatic restraint systems, computer controlled suspension, computer controlled engines, energy absorbing passenger compartments and uni-body construction to absorb crashes to name just a few. Car makers produce new car models every year and make major changes every three or four years.

Quantity: Sales have remained relatively high adjusting to market demand. Manufacturers have made no effort to reduce sales in order to reduce auto accidents.

³⁸ Huber, P., Liability: The Legal Revolution and Its Consequences, 1988. Referenced in Rowley, Charles, "The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique," The Right To Justice, 1990.

³⁹ Notes from a presentation by Dr. Mark Skousen to the Market Process Center, George Mason University, 25 April 1995.

Variations: There are dozens of car manufactures who each make dozens of models offering hundreds of options.

Using Skousen's three criteria, these three factors move in directions that would show increased wealth (more quantity, quality and variety) as well as innovation to improve safety. If we apply the same criteria to the American general aviation market we find:

Quantity: New production has fallen from 15,000 aircraft per year to well under 1000.

Quality: Though quality has not declined, there have been no new production general aviation aircraft certified in the U.S. since 1984 that have sold more than a few dozen aircraft. The existing aircraft have not undergone any significant design changes. Most improvements have been in the avionics arena⁴⁰ and for cosmetic changes.

Variations: Due to the large drop in aircraft production, the remaining manufacturers have reduced their product lines to only a few basic airframes with limited options.

Hence, it appears that using a Skousen-like analysis, that the general aviation market has deteriorated.

⁴⁰ Avionics refers to the communication and navigation equipment on board aircraft. Significant improvements and innovations have occurred in this area primarily due to military research and development that has generated commercial products. These products typically generate fewer lawsuits since a failure rarely results in a crash. In those few cases where failures might have led to accidents, it's difficult to prove equipment failure after a crash since the crash normally destroys or masks evidence of failure in small aircraft.

Throughout this research, I have focused attention on the rise in liability costs. However, there is another way to view this situation is that what we see here is a reallocation of costs. Simply put, prior to the current liability debate, crash victims received less compensation from the manufacturers for a greater number of crashes. This meant they were either compensated by personal insurance or shouldered most of the loss themselves. With the change in the structure of liability and access to litigation, the victims and attorneys were able to shift more of the burden toward the manufacturers. The manufacturers are expending larger sums of money toward liability costs, but as described earlier, most of the transfer has gone to the lawyers and the judicial system, not the victims. Thus it is not clear whether this shift in the liability system has resulted in a more equitable compensation for victims' total losses or is just a more efficient rent-seeking scheme by the legal profession. The situation was simply that the legal profession discovered in the 1960s and 1970s how to change the basic structure of the legal system to increase their rent-seeking, from which general aviation became a target. General aviation was not as successful at defending against this intrusion so suffered from increasing wealth transfers during this period.

Chapter Summary and Conclusions

This chapter presented several key points about the real costs of liability as applied to this industry and the applicability of theoretical tort theories. First, the high administrative costs (lawyers' fees) and preventable negligence on the part of the aircraft pilots raises serious doubts about any efficiency claims that strict or pseudo strict liability might offer. Second, these theories imply that liability costs can be charged to new production and that this added tax provides an incentive to innovate. Yet, with a large used liability tail that

generates no revenue for the manufacturer, this assumption is not valid. The efficient tort theories imply that a reasonable level of care can be established under a comparable negligence standard. Yet, attacks by plaintiff attorneys and emotional juries consistently overlook established levels of y^* which effectively leaves the defendant facing a strict liability situation.

A major point of the efficiency theories described in Chapter 4 was that one or both parties would invest in the appropriate level of safety. For this industry, it appears that the manufacturers made the appropriate effort since few accidents were attributed to design or manufacturing defects. Yet, the data showed the manufacturers are sued in almost every case. The evidence generally points to pilot error which in most case was preventable by either more training or better decisions (x^*)--something within most pilot's ability. This evidence suggests that movement toward strict liability is not appropriate for this activity. As I described in Chapter 4, the real motive behind the move toward strict liability appears to be rent seeking on the part of the legal profession since it increases their wealth at the expense of the manufacturers while doing little to improve aircraft safety.

Chapter 6. Passage of the General Aviation Revitalization Act

In August 1994 President Clinton signed the General Aviation Product Liability Reform Bill after a decade long battle.¹ This law exempts general aviation manufacturers from most liability suits for aircraft 18 years old or older.² Prior to this legislation, companies like Cessna faced unlimited liability for all aircraft ever produced under its license, over 120,000 planes in Cessna's case. With the decline of the industry over the past 15 years, passage of this bill became a priority for the general aviation lobby as a partial solution to the negative growth trend in their industry. As shown below in Figure 23, under the new legislation, the courts will not entertain product liability lawsuits against the original manufacturers for aircraft and products delivered before 1978. By the time Cessna begins full production in 1998, the vast majority of previous production will be exempted from liability. This chapter investigates the general aviation interest groups and how they managed to persuade Congress to grant liability reform against the objections of the legal community. I also show how the committee structure and its rules initially prevented the Bill's passage and what changes were deemed necessary to achieve passage.

¹ The first general aviation product liability bills were filed by Senator Nancy Kassebaum (R-KS) and by Representative Dan Glickman (D-KS) in 1986.

² This legislation limits liability to a period of 18 years after an aircraft's delivery to its first owner. Components added later would also be limited to 18 years after installation. The law only applies to general aviation aircraft with fewer than 20 passenger seats and that are not used in scheduled passenger-carrying service or military operations.

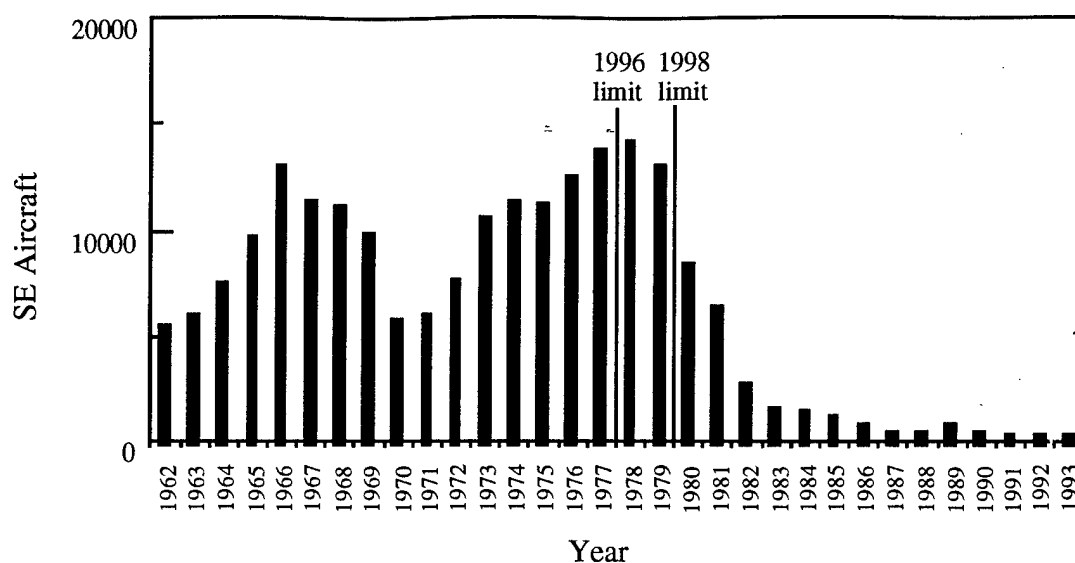


Figure 23. Liability Limits Under the Statute of Repose for Single Engine Piston Aircraft

Liability Costs

To the manufacturers, liability had become the major cost driver. As the producer of a product that occasionally results in the death of the user, these firms were quite familiar with liability risks. Yet, prior to the 1970s, large multi-million dollar lawsuit recoveries were rare. Damages were usually limited to aircraft replacement costs, medical expenses, and relatively low damages for loss of life. Punitive awards seldom occurred. However, with the growth of the number of lawyers and changes in jury decisions, liability became a major expense. Over the period from 1983-93, annual claims paid by manufacturers increased from \$24 million to over \$210 million per year as sales dropped ninety percent, despite an improved safety record. As a strong supporter of the statute of repose, Cessna Chairman Russ Meyer believed that liability was the biggest problem in general aviation and that this bill was critical to the industry's future. In a recent article he stated:³

³ Collins, Richard, "Cessna Boss Talks About the Future," *Flying*, August 1994.

I think passage of this legislation would be the most important single event since the Wright brothers made their first flight. It is more important than the development of any single product, more important than the FAA privatization of air traffic control, more important than investment tax credits or other regulatory issues. In my view, this [tort reform bill] is the life or death of the foundation of our industry.

Prior to the General Aviation Product Liability Reform Bill, aircraft companies were liable for all aircraft built under their type certificate.⁴ This means that who ever owned the current certificate, even if the aircraft was out of production, was liable for all past production. Manufacturers can not simply stop production to avoid the liability. They remain liable as long as they remain a viable business with a credible link to the past production. Prior to the passage of this liability bill, the only way to avoid liability was for the company to totally go out of business.

In the past, companies such as Piper purchased liability insurance with a fixed premium and deductible.⁵ By the late 1980s, the premiums had risen to \$25M with \$17M deductible. Basically, Piper would be out almost \$42M not counting legal expenses before coverage began. For Piper, this exceeded their yearly gross sales. Firms either had to pay the high premiums and hope revenues were sufficient to cover the cost, leave the business or operate without coverage. Smaller firms with fewer assets find having no coverage an acceptable compromise. They probably have low sales revenue but also few previous aircraft in their liability tail. When and if they get sued, they declare bankruptcy. This

⁴ The FAA certifies each new aircraft after successful testing as airworthy and approved for manufacture by issuing an aircraft specific type certificate. The certificate can be sold and the new owner can produce the aircraft (assuming no changes) without significant new certification costs.

⁵ Parr, Glenn, Piper Aircraft Corporation, "Legislative and Administrative Issues Impacting General Aviation Growth," 1993 FAA General Aviation Conference.

obviously has an effect on their sales, since the customer should be concerned about their future ability to support their product. Today, both Cessna and Piper are self-insured due to high insurance premiums.

Cessna, with over 120,000 previous aircraft still flying, had a tremendous liability tail. On the other hand, Cessna had a growing turbine business that rapidly overshadowed its piston business. Not only was this business more profitable, but it had a significantly reduced costs with less liability exposure. In this turbine market, adequate insurance is available at reasonable cost to the manufacturers. More important, turbine aircraft owners and operators carry adequate liability insurance and maintain higher standards of maintenance and training which reduces the liability exposure to the manufacturer.⁶ Faced with drastically reduced piston aircraft sales, Cessna reduced their production and finally exited the market in 1986. General Dynamics, a major defense firm, bought the company in 1985. Though they did not make the decision for Cessna to stop piston engine aircraft production, Cessna's impending departure from single engine piston production undoubtedly made the acquisition more appealing.⁷

In discussions with the former General Counsel for Piper Aircraft, the real concern is not just the price penalty, but the fear of a major jury award.⁸ It is not inconceivable that a single crash could lead to \$100M+ jury award.⁹ This amount would ruin a company or its

⁶ In this case, the owner-operators carry high levels of liability insurance which tend to limit plaintiff actions against manufacturers. Private aircraft owners could carry higher insurance levels, but at significantly higher insurance premiums which would raise aviation costs even more in this highly elastic market.

⁷ Based on a phone interview with Cessna's Vice President of Public Relations, Dave Fransen. February 22, 1996.

⁸ Phone interview with former Piper Corporation's General Counsel, E. Glenn Parr.

⁹ As discussed previously, the Teledyne Continental lawsuit produced an original judgment of \$107 million, thought was reduced by the court to only \$1.4 million. This jury award has set the precedent for future awards that might approach or exceed this amount.

parent company. Many of the remaining aircraft firms have been purchased by larger holding companies, some who have deep pockets. To large profitable holding companies, the current small profit margins on decreasing sales do not justify gambling on large legal expenses. Cessna is hoping to sell over 2000 aircraft in the upcoming years with eventual sales of 5000 per year. Even at these levels, this will represent less than 20 percent of Cessnas total revenue due to the growing turbine market.¹⁰

Some industry leaders¹¹ recommend that private pilots could solve this problem by carrying significantly higher liability limits on their aircraft which would then shield the manufacturers. However, with the current litigation frenzy, this could attract new entrants into the litigation market. The incentive to sue for both plaintiffs and lawyers is to collect as much money as possible, so increasing the expected award with higher insurance coverage might make the matter worse. To the individual pilot who rarely had an insurance claim due to an accident, this probably seemed like extortion since they personally received no increased benefits for the increased premiums. Further, its doubtful if the pilots had any desire to help out the manufacturers by substantially increasing their own insurance premiums.

As described earlier, the general aviation industry tried price cuts to spur demand and some minor aircraft improvements, but this had little effect. This industry (along with others) have attempted in the past to gain legislation limiting liability exposure. They were organized through several trade organizations,¹² including the General Aviation

¹⁰ Telephone interview with Cessna Vice President for Public Relations, Dave Fransen. February, 1996.

¹¹ I discussed this issue over the phone with Piper Corporation's General Counsel, E. Glenn Parr. He feels the low current personal liability limits of \$500,000 to \$1M are too low. If instead, the limits were significantly higher, then this would cover current awards, though at a significantly higher premium for pilots.

¹² These include the General Aviation Manufacturers' Association, Small Aircraft Manufacturers' Association, National Air Transportation Association and the National Business Aircraft Association.

Manufacturers Association, but never had sufficient resources to persuade Congress to make desired changes.¹³ This effort was met with strong opposition by the American Trial Lawyers Association who had much to lose by this type of legislation. Coupled with the fact that many Congressman are attorneys and control key committees,¹⁴ it came as no surprise that these proposals failed in the past to clear the appropriate committees. Though liability reform is generally opposed by most attorneys, the aviation litigation is controlled by a relatively small number of firms. Cessna reports that over 80 percent of the aviation liability lawsuits are filed by only 16 law firms who specialize in this area. These law firms have done significant research on the manufacturers as well as having invested in nine researchers who testify in almost all of the cases.¹⁵

From a public choice perspective, the general aviation industry lacked sufficient resources or constituencies to convince key Congressman to help them. They tried to convince Congress that they needed special relief in the form of tax credits, subsidies, or liability reform. The tax credits or subsidies were unlikely since owners of expensive aircraft would probably be considered the wealthy elite.¹⁶ Liability reform was an open issue. Most voters would agree that litigation activities were out of control, but unless this sentiment could be organized into an effective interest group, this approach would not work either. The average voter lacks sufficient information to know whether aviation accidents are caused by negligent pilots or manufacturers producing defective products.

¹³ The General Aviation and Manufacturers' Association made the first unsuccessful attempt at promoting aviation liability reform in 1974.

¹⁴ McCormick and Tollison, Politics, Legislation, and the Economy, Chapter 5, pp. 79-100. Tollison shows that lawyers have a low elasticity of demand since they can easily combine legislative duty with their law practices. He claims their rent seeking activities are hard to investigate and prove. So they can easily combine a low-paying legislative career with a high paying partnership in a law firm that leverages off of their activities.

¹⁵ Based on a phone interview with Cessna's Vice President of Public Relations, Dave Fransen. February 22, 1996.

¹⁶ I offer this comment based on the fact that new aircraft that would be affected cost well over \$100,000--a purchase that is out of reach of most Americans.

Manufacturers asking for relief were seen as trying to avoid their moral and legal responsibilities for their products. But if most of the users of the products joined the movement, this presented a different force to be reckoned with.

During this period of industry decline, general aviation's opponents, whether intentional or not, were having good success. These opponents were the Trial Lawyers Association, commercial airlines, the local land developers, community actions groups and many local governments. As Olson (1971) observed, groups that are already formed face lower organizational costs and therefore have a great advantage in influencing legislators and regulations. This was a case where winners were well organized and the losers were not. The pilots, being the losers, typically just disappeared from the activity or failed to buy a new airplane. As Becker notes, people will fight more when demand is inelastic. This apparent lack of a strong protest implies that demand for new aircraft was elastic.

The passage of the General Aviation Product Liability Reform Bill indicates that something changed to allow its passage. The bill had been submitted several times over the previous ten years with no success. Its passage this time was primarily due to two key factors. First, there was a change in the basic support for this legislation. This bill benefited from the news media reporting of a few outrageous liability lawsuits that occurred in the recent past.¹⁷ Coupled with this was the successful organization of a unified lobbying group that could challenge the established pro-litigation interest groups. The second factor was a different way of challenging the congressional committee structure and its gate keeping power. These are discussed in detail in the remainder of this chapter.

¹⁷ The most widely reported case concerned a senior citizen who bought a cup of hot coffee at a McDonalds restaurant drive-in window. As the lady drove off, she spilled the hot coffee causing severe burns. She sued McDonalds claiming the coffee was too hot for its intended purpose, since McDonalds knew most customers would attempt to drink it in a moving car. She won and received a relative large award.

Rise Of The Aircraft Owners And Pilots Association

As the industry began its decline and costs rose in the 1980s, there were several small pilot organizations that tried to serve the pilots' needs. Most of these groups were based on the types of planes its members flew, common career fields of the pilots or the type of flying they performed.¹⁸ Though the individual pilots all suffered from the same increase in flying costs, they lacked sufficient organization or information to engage in collective actions. Though each of these aviation groups had its own agenda during this period, none was able to represent the majority of pilots or have sufficient political strength to take any substantial action. Further, due to their large number and their varied agendas, there was no single strategy or solution to the existing problems. These clubs served to disseminate information about specific aircraft, but little effort was made to direct national agendas.

The Aircraft Owners and Pilots Association (AOPA) had been in existence for several decades, but suffered from a lack of pilot support due to extensive free riding. The benefits of AOPA lobbying were free to all, whether members or not. The organization seemed to make adequate progress with a small membership so the cost of joining and contributing another vote was out-weighed by the benefits of free riding. Prior to the mid 1980s, most pilots were happy with aviation and had no real incentive to actively support any of the national organizations. The AOPA basically served its pilots with help on issues involving the Federal Aviation Administration and its implementation of regulations. These problems typically were individual in nature and usually concerned one's medical certificate or involvement in regulation infractions.

¹⁸ Examples of these clubs include the Cherokee Pilot's Association, The Flying Doctors, the Flying 99s (a women's pilot group), the Experimental Aircraft Association and the Soaring Society of America.

However, by the mid-1980s, individual pilots were sensing the negative impact that regulations, liability and general rising aviation costs were having on their activities. Many were directly or indirectly involved with the general aviation industry, so felt the economic impact of the industry decline. They saw the rising costs of flying in terms of flight operations, new aircraft and of their personal time investment. AOPA began an aggressive program to improve its services to reduce flight costs through training seminars, information exchange services and improved member counseling on aviation matters. These services were only available to members so this provided an incentive to join, thus decreasing the free rider problem. The AOPA also began an extensive campaign to work with local communities to gain support for local airports and to educate the communities on the benefits of maintaining these airports.¹⁹ Faced with the prospect of losing the use of a close airport, membership costs were seen as an investment in one's flying capital. The organization also began a thorough program of educating its members and non-members on key issues facing general aviation. This not only made the pilots aware of problems facing them and the aviation industry, but also how an organization like the AOPA might help.

These activities resulted in AOPA gaining the membership of over half the active pilots in the US, with a current membership of 340,000. As shown in Figures 24 and 25, the rise in membership occurred at a time when total pilots were decreasing. By gaining the membership of almost half of all pilots, AOPA has some justification when they claim to speak for the pilots in the aviation community.

¹⁹ I interviewed several of the officials at the AOPA headquarters. Though the AOPA had provided many of the same benefits for many years, the relative value of these benefits apparently rose sufficiently to convince "free riders" to join. The organization was making a big push to actively get involved in communities that were in danger of losing their local airports. This occurred at this time due to an increase in community encroachment as well as a relative decrease in the cost due to the larger membership and resulting financial assets.

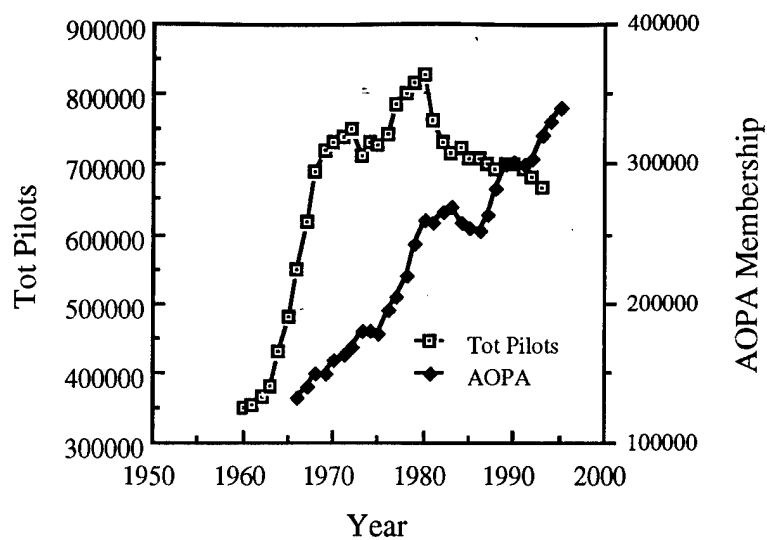


Figure 24. Total AOPA Membership and Total Pilots

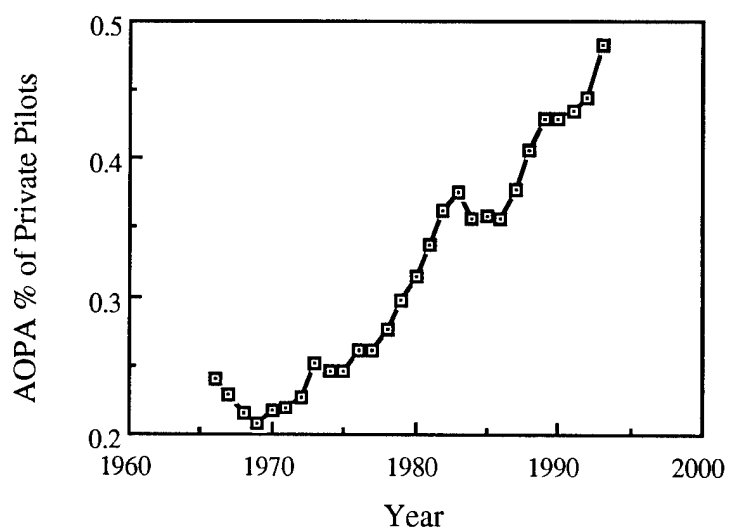


Figure 25. Rise in the Growth of AOPA Membership as a Percentage of Private Pilots

Interest Groups with Common Goals

One question is why would the AOPA join forces with the aircraft manufacturers to limit costs for those manufacturers. Since AOPA members (or pilot free-riders) and/or their survivors typically benefit from the rising liability awards, why would they support such legislation? The aviation industry through the AOPA convinced the pilot community that regulatory protection (liability limits) would help rather than hurt pilots and that without a major effort the reform would not occur.²⁰ The manufacturers claimed with some justification that increased liability costs forced them to charge higher prices, most of which were going to attorneys, not survivors. Rising prices and changes in demand produced the ninety-five percent drop in production.²¹ The piston engine aircraft industry²² stated that if liability reform passes, they would attempt to provide lower-priced, modern aircraft. With the promise of new aircraft at lower prices as well as new jobs in aviation, this convinced the AOPA (and its pilots) to support the manufacturers. Thus, this caused the formation of a new joint interest group that included the AOPA and various aircraft manufacturers and their interest groups and associations. This alliance created a much larger and wealthier constituency that had more political power than any of its parts.

²⁰ Note, that as discussed in Chapter 5, the statute of repose may have effectively transferred the liability burden from themselves to the pilots.

²¹ The connection between the rising liability and reduced demand requires an accounting of aircraft costs and liability costs during this period. Though rising liability expenses drove costs upward, this might not explain the majority of the demand shift. Other factors such as increased training and education requirements, more complex airspace and regulations, new equipment requirements, more recreation and transportation substitutes, and a higher value placed on one's time also shift the demand curve for aviation products.

²² Cessna, which ceased production of light aircraft in 1986, has maintained it will produce as many as 2000 aircraft in its first year after production resumes at a competitive price. This seems optimistic since the existing manufacturers in the class produced less than 500 aircraft per year in recent years. However, the basic agreement was the Cessna, who would benefit the most, promised to share the wealth transfer by offering lower priced aircraft. As of Spring 1996, Cessna had yet to announce its prices which would indicate if they were able to offer lower priced aircraft to the public.

Structurally Induced Stonewalling

The powerful Trial Lawyers Association, of which many congressman are members,²³ thwarted early attempts to legislate liability reform, since passage of this legislation might limit their future income.²⁴ Stigler points out that when an industry attempts to obtain beneficial regulation, its benefits will fall short of the damage to the rest of the public²⁵. In a similar way, industries fight to avoid restrictive regulation that hampers their ability to prey on the public. For years, the House Judiciary Committee Chairman, Jack Brooks(D), never let this bill (or other liability reform bills) out of committee since it would have a negative impact on the legal profession's income²⁶. Though the aviation group tried for a decade, it was not until the political climate changed that liability reform, against the wishes of other established lobbies, was possible.

Rowley discussed how structural induced equilibrium in committees can make regulations quite durable.²⁷ This is simply due to the fact that committees tend to be filled by people who have the most to gain within the committee's sphere of influence. These structural rules prevent meddling with past regulations as well as preventing future ones. The most obvious benefit is gate keeping control over which bills are introduced, discussed

²³ Tollison, Robert, "Public Choice and Legislation", Virginia Law Review, 1988, pp. 339-368.

Tollison argues that in legislatures with low relative pay, lawyers are the first to volunteer due their ease of generating wealth in and out of office. Therefore, its no surprise that Congress would have a large number of lawyers concerned about maintaining their financial livelihood.

²⁴ If the legislation became law, this would limit the rents available from this source, so the rent-seeking would also decrease as the lawyers turned to more lucrative targets. Obviously, this also occurs if the industry goes under due to the high cost of liability.

²⁵ Stigler, George, "The Theory of Economic Regulation", The Bell Journal of Economics and Management Systems, Vol. II, Spring 1971, p. 10.

²⁶ Tollison, Robert, "Public Choice and Legislation", Virginia Law Review, 1988, pp. 339-368. Tollison states that the committees are primarily responsible for the production and ending of prospective legislation.

²⁷ Dr. Charles. K. Rowley, Introduction to Public Choice Theory, Vol. I, 1993

or voted on. The committees can easily hold bills hostage even though a majority of the House or Senate may be supportive.

In this case, the House Judiciary Committee, composed of lawyers, had no incentive to support across-the-board liability reform. The Chairman, Jack Brooks, wielded total agenda control to stop any attempts at liability reform.²⁸ Representative Dan Glickman (D-Kansas) introduced legislation each year since 1986, but suffered a quick defeat each time.²⁹ An early problem was that Glickman's bill attempted too much. It amended tort law, discussed punitive damages and other aspects of broad liability reform. Supporters eventually decided to limit the bill to a statute of repose for general aviation. An early proponent of the statute of repose was Cessna's Chairman, Russ Meyer, whose company stood to gain the largest wealth transfer from such a repose.

A problem for the general aviation industry was gathering non-industry support for the legislation. If only the industry benefited, this would be seen by the public as just more rent-seeking by another industry special interest group. The solution was convincing AOPA leadership and other groups that this was also good for the consumer. Proponents reasoned that this would not only allow Cessna to sell relatively low-cost aircraft, but that it would benefit the support contractors due to the increased volume. Thus, whether one bought a new Cessna or flew other aircraft, costs would drop and all would benefit. The bill was also characterized as being a jobs bill that would hopefully have broad positive effects in many parts of the country, a popular notion right before the 1994 mid-term elections.

²⁸ In the case of the aviation tort reform bill, Chairman Brooks allowed the full committee to consider this bill rather than delegate it to one of the subcommittees.

²⁹ Representative Glickman's congressional district includes the main Cessna manufacturing facilities.

The effort to gain passage began in 1993 with Representatives Dan Glickman (D-KS) and James Hansen (R-UT) introducing the general aviation statute of repose. At the same time, AOPA began its information campaign to its members. Many of AOPA's senior leadership write for the AOPA publication, *AOPA Pilot*, as well as other major aviation magazines and journals. Thus, the aviation consumer was exposed to many articles each month detailing the purported virtues of the statute of repose, which slowly gained the grassroots membership's support.³⁰ The constituency problem involved organizing all of the industries effected by the sales decline and letting the Congress know that this bill might improve economic conditions in those districts. AOPA membership weighed in with thousands of letters and phone calls as well as providing expert testimony to counter opponent's claims. They held town meetings with local pilots and local congressmen to discuss the bill and the current state of aviation. Next, there happened to be several private pilots and many frequent passengers of general aviation aircraft in Congress (compared to the general population) who understood general aviation's problem.³¹ Since the bill was technically a statute of repose targeting general aviation, and not a general waiver of liability this made it easier for some to accept.³² With this initial work, supporters felt that the bill would pass either house, if the bill ever made it to the floor for a vote.

³⁰ Not only did AOPA offer information, but they began to offer a yearly free aircraft sweepstakes. Rather than buy a new plane, they bought used Cessnas and had them refurbished as an example of what lengths members would have to go through to get a quality Cessna. As a further enticement, they offered to give away the first two new Cessnas if the repose statute passes and Cessna was able to restart production.

³¹ Though only 1 in 300 Americans have a pilot's license, a much higher proportion of professionals and middle to high income individuals fly, primarily due to the required income. Many congressmen fly on a regular basis utilizing general aviation aircraft.

³² Most lawyers are solidly against liability reform for personal wealth reasons and for legal reasons. This has been a traditional Democratic position since the 1950s and reflects the general Democratic distrust of large businesses. A statute of repose basically limits the number of years that a firm is considered liable for its product.

The major problem was how to clear the committee system. This bill had to pass the lawyer dominated full judiciary committee in the House and as well as the judiciary committee in the Senate, which seemed unlikely due to its negative impact on the legal profession. The judiciary committee maintained an adequate majority against the statute of repose and refused to let the bill out of committee. Though the bill apparently had the support of a majority in the House as well as President Clinton's support, this was insufficient. Under the existing system, unless the Chairman supported a bill, it would rarely be released by the committee. The other members could try to overrule the chairman, but this would exact some penalty in the future.

The House of Representatives did have a rule that allowed a bill to go to the floor for a vote without committee approval. The petition for discharge is a tool intended to keep bills from being bottled up in committee. If a majority of House members sign such a petition, the bill is discharged from the committee without the committee's approval. It then can go to the floor for a vote. The problem with this procedure was that the petition's signatures were kept secret. This meant that congressmen could publicly voice support, but then fail to sign the petition either due to their true beliefs or due to logrolling.³³ In the past, congressman would publicly sign on to co-sponsor bills, but then fail to sign the discharge petition. Furthermore, challenging a committee's authority over its personal jurisdiction is politically dangerous for a member's career and his own legislative agenda.

The aviation tort reform bill's eventual release was due to a change in the structural procedures due mainly to the efforts of House representative James M. Inhofe (R-

³³ Mueller, Dennis, Public Choice II, Cambridge University Press, 1989, pp. 82-87. Logrolling is the trading of votes among congressman to assure passage of one's most important legislation. Thus, a congressman will vote against his constituency on a minor issue in order to gain votes for more important legislation.

Oklahoma). Representative Inhofe was an AOPA member, the owner of four general aviation aircraft and a supporter of the statute of repose for general aviation. Due to concern for this bill and others, he led an effort to change the secret discharge petition to an open discharge petition. In mid-1993, he convinced his colleagues that they had more to gain by freeing up their own bills than they might lose by thwarting others in committee. This new rule meant that congressmen were now faced with the possibility of explaining to their constituencies why they co-sponsored a bill but then refused to sign its discharge petition.

An important question is why the discharge petition change occurred and why the House members allowed it to change. Apparently, the rules had worked satisfactorily in the past, so something must have changed to cause this shift in the equilibrium. One possible explanation is that the House members suddenly decided to provide a more open environment and allow the public more access to their activities. This seems unlikely knowing the importance of the secret discharge petition to vote trading and agenda control.

A more plausible explanation is that Senator Inhofe³⁴ took advantage of the mood in the country in 1994 to force a rule change that would benefit members who had suffered under the Democratic agenda control in the committees.³⁵ Inhofe took advantage of this mood to convince his colleagues on the floor of the House to support this rule change as a public means of demonstrating support for reform in the House. A major piece of the Republican platform in 1994 was Congressional reform and Republicans attempted to depict the Democratic House and Senate as unresponsive to the American public. Inhofe

³⁴ Senator Inhofe decided to abandon his House seat at the end of the 1994 term and was elected to fill the vacant Senate seat of retiring Oklahoma Senator Dave L. Boren (D).

³⁵ Much of this section is based on a telephone interview with Senator Inhofe's legislative assistant, Ruth Van Mark, March 22, 1996.

was quick to point out that the Democrats often publicly supported issues, but in private failed to support the particular bills or agendas. The secret discharge petition was a prime example where congressmen co-sponsored bills, but then failed to sign the discharge petition.

To make his point, Inhofe began a saturation campaign of conservative, pro-republican talk shows both on radio and television to make his point. A key piece of this message was the secret discharge petition and how it was used to deceive the public. He made sure that he appeared on shows that were in the districts of House members that opposed his rule change and challenged the constituents to ask their congressman why their alleged signatures on discharge petitions should be kept secret. Further, he gained the support of key conservative publications, including the support of the editors of the Wall Street Journal. The Wall Street Journal played a key role in helping to change the minds of several key opposing House members. The Wall Street Journal published the list of House members who co-sponsored the rule change resolution. Then, the newspaper somehow managed to gain access to the list of House members that signed the secret discharge petition asking for the release from the rules committee of the rule change proposal. The Wall Street Journal was quick to point out that many members who co-sponsored the bill failed to sign the discharge petition and publicly asked for an explanation of the apparent deceptive practice on the part of those members. This adverse publicity along with Inhofe's talk show attacks apparently changed the minds of enough opponents to allow for the rule change to clear the rules committee and be passed (Fall 1993)

The passage of the rule change can be viewed using a two dimensional model suggested by Weingast (1981)³⁶ and shown in Figure 26. This model considers a structurally induced equilibrium in a two dimensional policy space. For this model, we simplify the House member's position on the rule change to consist of two issues. The first is support for the change to public discharge petition. As discussed above, many members used the secret petition to their personal advantage, especially as it applies to agenda control and vote trading. The second issue, previously subordinate to this rule change, was the public's perception of this rule and the general mood of the electorate. Movement to the right along the horizontal axis indicates increasing support for the public

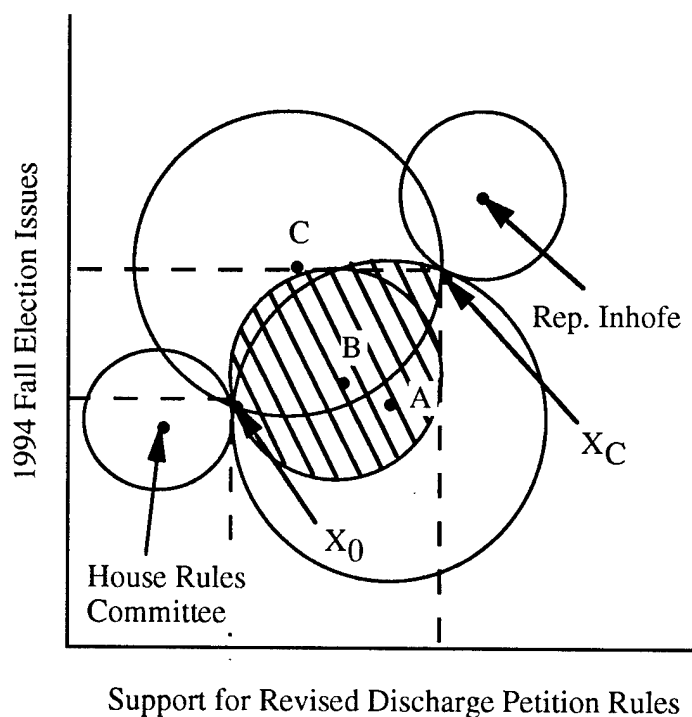


Figure 26. Compromise on the Discharge Petition Rules.

³⁶ Weingast, Barry R., "Regulation, Reregulation, and Deregulation: The Political Foundations of Agency Clientele Relationships," *Law and Contemporary Problems* 44, Winter, 1981, pp. 147-177.

petition versus the secret petition. Movement along the vertical axis indicates support for general Congressional reform and easing of the alleged bureaucratic control exercised by the senior representatives.

Prior to Inhofe's actions, the rules committee obviously opposed the rule since it hurt their agenda control and their actions typified incumbent control of the House. Thus, the rules committee appears in the lower left hand corner circle.³⁷ The three indifference curves labeled A, B, and C represent other House members (not on the rule committee) that favor different views on these issues. Prior to Inhofe's proposal, the equilibrium was at X_0 . This equilibrium at X_0 is the intersection of the committee's indifference curve with the feasible majority of the outside members. This position was achieved due to some level of compromise among the committee and pressure from the outside House members. As long as nothing significant occurred outside the committee and no major changes occurred within the committee, the equilibrium should have remained stable at X_0 . The shaded area represents other feasible equilibrium positions on these two policies that would be favored by a majority of the House if the committee loosened its agenda control and allowed outside input to the decision.³⁸

However, things did change with the aggressive campaign by Representative Inhofe to gain passage of his discharge petition rule change. Representative Inhofe's position is shown in the upper right hand quadrant. This different position resulted in the compromise at X_c which was quite different than the previous equilibrium. House members were faced with the choice between maintaining the benefits of agenda control

³⁷ In this model, the circles represent indifference curves over the policy space. The indifference curves radiate outward from the preferred maximum position, so preferences decrease as one moves outward from the center.

³⁸ For this example, the shaded area simply represents the intersection of the policy space that supports a majority of the three members.

versus the very real possibility of not being re-elected by an untrusting electorate. Many opponents obviously chose to support the rule change.

The general aviation statute of repose was introduced and quickly became bottled up in the House Judiciary committee.³⁹ Representative James Hanson (R-Utah) sponsored the discharge petition under the new rules and over several months gained sufficient signatures for discharge. In this case, having to openly declare support or non-support had a rather clear-cut implication. Those who signed would appear to constituents as supporting jobs across most of the country where general aviation firms were located. Those who failed to sign would appear to be supporting the rent-seeking behavior of lawyers at the expense of the average voter's jobs. This bill was introduced at the same time much of the public attention was focused on liability abuse due to the wide reporting of several of the aviation accidents and the famous McDonald's coffee incident. Thus, this bill benefited from a change in the structure that caused a slight shift in power away from the dominant committee system. The Bill was also introduced and released from the House Public Works and Transportation sub-committee on Aviation, which provided added pressure for its release.

At the same time, a similar bill introduced by Senator Nancy Kassebaum (R-Kansas) appeared to sail through the Senate, passing 90-8. The reality was the passage was the result of six months of behind the scenes work by Senator Kassebaum and her supporters along with strong interest group support.⁴⁰ Senator Kassebaum and her associates effectively blocked other important bills which left product liability opponents little option

³⁹ Much of this section is based on a telephone interview with Joanne Bowers, a legislative researcher for the AOPA Legislative Action Division.

⁴⁰ Chapman, Thomas B., "Working the Hill," AOPA Pilot, September 1994.

but to compromise.⁴¹ At the same time the Aircraft Owners and Pilots Association launched its first ever grassroots telephone campaign to support a bill in Congress. Using its membership database and state liaison officials, the Aircraft Owners and Pilots Association contacted local influential members, convincing over 2000 of them to call their Senator (mainly democratic holdouts) and voice their opinion over a short period of time. This phone campaign made use of a new technology available to lobbying groups called automated phone patching. The interest group contracts with a telemarketing firm that prepares a recorded script targeted at key interest group members in key states. This automated system calls the members at home or work, asks them to personally call their Senator and then immediately transfers the call to that Senator's office for free.

The rules in the Senate are different than the House, but just as restrictive. In the case of this bill, the opposition's strategy was a quick vote, since they expected the supporters lacked sufficient votes. With only four days notice, Senator Kassebaum and her supporters contacted the AOPA and other groups to quickly began a massive campaign to garner support. Though the Senate bill had 51 co-sponsors, its supporters knew this was insufficient to guarantee passage. The supporters identified 21 undecided Senators in 15 states who were then targeted by the knew phone patching technique. Each received hundreds of calls within a short three day period resulting in 20 of the 21 voting for the bill.⁴²

⁴¹ At the time this bill was being debated, there was a much larger debate over broad liability reform that left both the Senate and House split. Since this bill was also advertised as a jobs bill for a specific industry, it may have represented a viable compromise to appease the liability reform movement without having to directly address the broad liability debate.

⁴² Bowers, Joanne, AOPA Legislative Action Office, Washington, D.C.

The effective agenda control by Senator Kassebaum and her opponents convinced Senator Metzenbaum (the leader of the opposition) to change his position and announce support for the bill which passed 90-8. In retrospect, the key to this passage in the Senate was due to several factors that were not present in previous attempts. First, the bill's authors proposed a narrowly focused liability reform bill that avoided the debate over general liability reform (which happened in earlier attempts) and only implemented a statute of repose. Second, Senator Kassebaum quickly compromised on the bill's details by including three key exceptions demanded by Senator Metzenbaum.⁴³ Finally, the supporters were able to quickly organized a massive campaign to gather undecided votes in a quick and efficient manner using a new technique.

With this pressure of the Senate passage, the AOPA led lobbying which directed over 30,000 letters and phone calls to the opposition and undecided representatives, and the impending embarrassment of the discharge petition looming, the House Judiciary Chairman Jack Brooks decided to support the bill. This decision resulted from the realization that the petition had ample support and would win full House approval. If Brooks stood his ground and let the discharge petition overrule his committee, this would make him look weak and ineffectual. By agreeing to let the bill out, he was able to save some face and also add minor changes to make the bill more palatable to the legal establishment.⁴⁴ The fact that the bill was modified in a compromise with the chairman may be evidence of a Peltzman-like compromise.⁴⁵ In this case, the sponsors could have won by forcing the

⁴³ Senator Metzenbaum has a strong reputation as a consumer protection advocate. He required that the bill exempt willful fraud, victims injured on the ground, and medical evacuation flights.

⁴⁴ Chairman Brooks actually agreed to release the bill before the petition was actually signed by the majority of the House, but straw polls by his staff showed an overwhelming majority supported the bill.

⁴⁵ Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics*, August 1976, pp. 211-240. The original bill called for a 20 year statute of repose while the Rep. Brooks wanted a 15 year period, thus the compromise of 18 years. Additionally, the bill also was altered to exclude manufacturer fraud, medical evacuation and non-flying victims on the ground.

petition, but would have probably paid a political price in the future.⁴⁶ Here we see that the sponsors conceded a little at the margin to the opposition. With this momentum, the bill passed in the House when it finally came up for a full vote. Even the vote was a compromise, since it was a voice vote and not a role call vote.⁴⁷

The problems the aviation industry had with this bill clearly demonstrate the implications of a committee system that generates structurally induced equilibrium.⁴⁸

1. Since liability reform was a "local" issue for the entire Judicial committee (all lawyers), so their interests dominated the committee's position.
2. Facing a single, narrowly focused issue, they were strongly biased.
3. To the other House members, this was not necessarily a strong "local" issue, but jobs do interest all members, so providing support was politically feasible.
4. The committee did attempt to protect their relationship with the Trial Lawyers Association, yet the majority of the House was more concerned about their relationships with their district voters. In this case, the constituencies understood the details of the bill and who gained and lost if the bill was not passed.

The main reason this bill passed in the House was the change in structural rules governing discharge petitions. This new rule had a destabilizing effect on the status quo of the committee's power. Since this bill did have general support the petition for discharge was a satisfactory solution. The petition will work well when the bill being

⁴⁶ As an aside, Representative Inhofe who forced the rule change, shortly thereafter resigned to run for and win a Senate seat later that year. Representative Glickman (D-KS) resigned when Clinton became President to become the Secretary of Agriculture. Senator Kassebaum has announced she will not seek re-election at the end of her current term. Critics might offer that the actions by these congressmen represented end-game strategies rather than a fundamental attempt to change or challenge the existing structure of the Congress.

⁴⁷ By making it a voice vote, this eliminated any official record of actual support or opposition. In contrast, Senator Kassebaum (R-Ks) who sponsored the Senate version of the bill requested and received a role call vote.

⁴⁸ Dr. Charles. K. Rowley, lecture notes on Industrial Organization, Fall 1994.

considered provides positive benefits for one group and no significant negative benefits for the majority of the rest. In this case, the only group that was perceived to be hurt were the lawyers, who might lose some income. However, most congressman would not want to seriously take the position with their constituents that lawyers and their rent-seeking behavior need to be protected. This bill also benefited from media hype over outrageous lawsuits involving negligent plaintiffs that were appearing on television and in newspapers at the time. Therefore, this was good a petition for discharge to sign since it could be used to demonstrate Congressional resolve to free a popular bill held hostage by a powerful committee chairman. Logrolling also played a role since either a district had aviation industry jobs and would support it or it was neutral for a district so a yes vote could be traded for a future beneficial vote.

The situation leading to the bill's passage in the House can be viewed using Weingast's model (1981)⁴⁹ and shown in Figure 27. This model considers a structurally induced equilibrium in a two dimensional policy space. In the case of the general aviation tort reform bill, we can simplify the interest groups' positions to consist of two issues. The first is tort reform, which the House Judiciary committee opposed and the general aviation interest groups supported. The second issue, subordinate to tort reform, was some type of jobs bill to boost the industry.⁵⁰ The House Judiciary committee did not oppose pro-employment bills, but had no strong desire to support one specially targeted for general aviation. Most important, they did not support any pro-job legislation that used liability limits as the mechanism to boost employment.

⁴⁹ Weingast, Barry R., "Regulation, Reregulation, and Deregulation: The Political Foundations of Agency Clientele Relationships," *Law and Contemporary Problems* 44, Winter, 1981, pp. 147-177.

⁵⁰ Though the main purpose of the General Aviation Product Liability Reform Bill was to limit liability for small aircraft, it has a secondary purpose of revitalizing the general aviation industry and thus increasing employment in that industry.

In this model, the policy space has liability reform on one axis and pro-job legislation on the other. As one moves to the right along the liability axis, this means that the group supports increased liability reform. Movement upward along the jobs axis implies that the groups support legislation that boosts employment, in this case in the general aviation industry.

In Figure 28, the points on the graph represent policy alternatives made up of positions on liability limits and pro-jobs legislation for general aviation. The circle in the lower left corner represents the House Judiciary committee which has very little desire to limit liability and minor interest in boosting employment (due to the tort reform mechanism). The committee's position is at X_J and the circle represents circular indifference curves over the policy space. Representative Hanson supports both increased jobs in the industry and the liability reform bill, so is depicted with a position in the upper right hand corner at X_H . The three indifference circles labeled A, B, and C represent other House representatives (not on the Judiciary committee) favoring positions closer to Representative Hanson's.

Prior to Representative Hanson's discharge position (and the bill it represents), the equilibrium was established at X_0 . This equilibrium at X_0 is the intersection of the committee's indifference curve with the feasible majority of the outside members. In this case of the general aviation tort reform bill, the shift in position, X_0 , was caused by the introduction of the Glickman-Hansen general aviation tort reform bill and the Hanson discharge petition. The large number of the bill's co-sponsors (307) and the rising number of signatures on the discharge petition suggested that the majority of the House supported a position different from that of the Judiciary committee, a position located

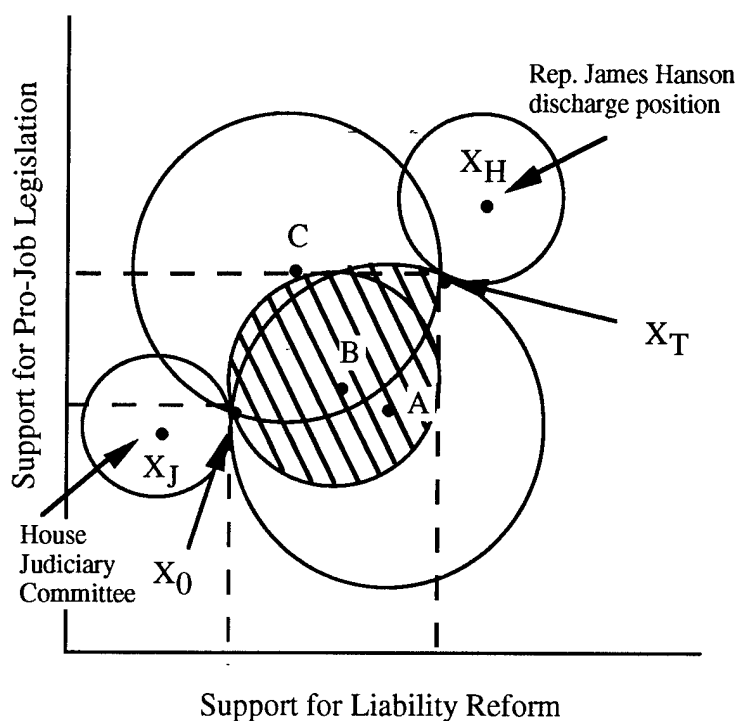


Figure 27. Structurally Induced Equilibrium Model of the Tort Reform Passage

somewhere in the shaded region of the model. Chairman Brooks decided to take up the issue and gain some control over where in the shade area the final version of the bill would lie, rather than loose all control over the issue and risk a bill that might end up at X_H . Chairman Brook's committee was successful in avoiding a new equilibrium at X_H since they managed to gain a compromise on the number of years of the liability limit (18 years) and on details concerning exclusions. Of greater importance, it allowed the committee to ignore broader liability reform issues.

Empirical Analysis of the House Support

Based on the above discussion, there should be signs of clear support from the aviation supporters (pilots and manufacturers) and disapproval from the legal profession. To analyze this, I chose a geographically based model that considers congressional characteristics that might affect the way the representatives vote. The dependent variable would be the yes or no vote with the independent variables representing key interest groups supporting the legislation. Since this bill was passed on a voice vote there was no record of the actual vote. The discharge petition was still gathering signatures when Chairman Brooks stopped the process and agreed to release the bill. I was able to obtain the list of signatures of the bill's co-sponsors to use as a proxy for the vote. The data is not perfect since the lack of a signature does not necessarily indicate a no vote. However, the error introduced from this should be on the side of passage since these errors are from too many no votes. However, there is no guarantee that the co-sponsors actually voted yes for the bill. Thus, this analysis can only be viewed as evidence of the support that House members wished to publicly express prior to the discharge petition or the agreed upon release by Chairman Brooks and subsequent voice vote.⁵¹

⁵¹ Data obtained from the AOPA legislative action division as of April 1994, three months prior to the bill's passage in the House.

My first model considered all factors in a simple multiple regression:

Table 10. Preliminary Model of 1994 Tort Reform Support

	Coefficient	T-statistic
Yes Vote =	+ 0.3482 (constant)	3.826
	+ 0.0038 Fed Aviation Funds/capita ⁵²	1.247
	+ 0.381 Republicans	10.046
	- 0.00002 Number of aircraft ⁵³	-1.121
	+ 0.123 Aviation industry in district ⁵⁴	4.342
	- 0.234 House member is a lawyer ⁵⁵	-6.077
	+ 0.00001 Number of pilots ⁵⁶	1.119
	+ 0.00061 Population per Lawyers ratio	3.196

This model had an adjusted r^2 of .311, but many insignificant coefficients. The best model was one containing just:

Table 11. Final Model of 1994 Tort Reform Support

	Coefficient	T-statistic
Yes Vote =	+ 0.599 (constant)	20.3
	+ 0.380 Republicans	9.92
	+ 0.126 Aviation industry in district	4.44
	- 0.224 House member is a lawyer	5.8

52 This is state share of the FAA allocation for airport and airway improvements as well as the state's share of the Aviation Trust Fund disbursements. This data was provided per state, so the model uses the average per district--which tends to soften the real impact per district of these funds. A better data set would be actual funding per district, but this was not immediately available.

53 This represents number of registered general aviation aircraft per state allocated as an average number per district.

54 This data proxies the extent of general aviation activity in a district. Detailed data on all firms was not available, so this represents only the larger aviation firms.

55 Data on representatives based on data in Congressional Directory. It is possible there are more attorneys than listed since many of the biographical sketches were incomplete.

56 The number of current FAA licensed pilots per state, given as average per district.

With an r^2 of .297, it contains the key element of my proposal that the vote was influenced by the house members occupation (attorney) and aviation industry in or near the district. The republican influence is possible due to the republican philosophy of less restrictions on businesses (limited liability). There is also the democratic agenda that government must protect its citizens from negligent manufacturers--thus unlimited liability. This bill had good timing in the sense that liability reform was popular, yet Congress has been unwilling to grant blanket liability relief. I expected the number of pilots to be significant since a high percentage (52%) are members of AOPA. This data was collected by state, so I had to use an average over districts, rather than the exact number per district. This may have hidden any significant effect. I also looked at the number of lawyers and the population per lawyer ratio and found this to be insignificant with almost zero correlation. This is not surprising since I suspect the majority of the lawyers' support is funneled through the trial lawyer association and focused on the key committees which have the greatest power.

This bill had major republican support (though its sponsor Rep. Glickman is a democrat and a lawyer from Wichita, Kansas -- home of Cessna and Beech Aircraft). Table 8 shows a breakdown of the supporters. Most republican lawyers voted for the bill while democratic lawyers disapproved, implying that the politics were more important than the professional considerations. This might imply that the impact of the Trial Lawyers Association was not as strong of a player as in previous passage attempts. Additionally, the economic losses of the downturn in aviation on voters make it difficult to defend a vote that benefits lawyers at the expense of working-class voters. This bill also benefited from the 1994 election issues and hype. One of the key issues was a distrust of government and a desire to reduce government intrusion in both business and personal affairs. The courts' rulings on liability may have been seen as evidence of "big government" using

liability as a form of social insurance. Thus, many congressmen may have seen this bill (among others) as a litmus test on controlling government excess.

Table 12. Breakdown of Legislation Support

Co-Sponsors in House for bill:	307 Yes 128 No	70%
Democrat co-sponsors	134/259	52%
Republican co-sponsors	171/178	96%
Democratic lawyers	113/259	44%
Republican lawyers	47/178	26%
Dem Lawyer co-sponsors	42/113	37%
Rep Lawyer co-sponsors	41/47	87%
Dem Districts w/aviation	48/259	18%
Rep Districts w/aviation	58/178	32%

Though this regression does explain some of the support for the vote, there is quite a bit of unexplained error attributable to other sources. Whether that is ideology or just error is unclear. Part of that error might be removed through a more detailed database. For this effort, I used only the larger aviation industries, but this did not capture all the firms that benefited from the bill. Additionally, my data did not contain a proxy for support from the Trial Lawyers Association per congressman (such as campaign contributions). Finally, most of the FAA data on aviation activity and support is by state or region and not by congressional district. This meant I had to use state-averages for districts, which weakens the results. A last area of data would be on liability claims and accidents. There are actually very few accidents and fatalities in general aviation, so the number affecting any

congressional district is quite small. However, the hype surrounding an individual accident may leave a lasting impression on the voters and congressman. FAA data on accidents is available per state, but it is unclear if this data represents accidents in those states or aircraft from those states that had accidents (which could have crashed anywhere).

The Industry After Tort Reform Passage

In the last two years since passage of the General Aviation Product Liability Reform Bill, the impact of this legislation on the aircraft industry has been mixed. Cessna has kept its word and has begun preparation to reenter the light aircraft market, with new production expected in the fourth quarter of 1996. At this time, they plan on producing similar aircraft to those built in 1986 with minor changes. Cessna's CEO Russ Meyer says he will produce 1500-2000 single engine piston aircraft the first two years of production. This is three to four times the number currently produced by the entire piston engine industry. Prices have not been announced.

Raytheon-Beechcraft Company, has announced major cuts in small aircraft production due to continued declining sales. The company will focus most of its efforts on corporate jets and turboprops. Its parent company, Raytheon, has merged the smaller company with itself to reduce administrative costs.

Piper Aircraft Corporation emerged from bankruptcy, but plans no drastic changes in prices or with only a small increase in output. While under bankruptcy protection, they were protected from lawsuits, but now they may face a backlog of lawsuits. Charles M. Suma, CEO of Piper Aircraft Corporation, recently stated that Piper has no plans to lower

its prices.⁵⁷ He hopes the statute will provide some stability in the marketplace to allow for reasonable insurance costs. The only near term price reductions he has seen are for some minor components due to some volume increases, which might offset rises in other components. Suma sees no significant increased demand for his products even with the new statute of repose. He notes that Piper, like its competitors Cessna and Beechcraft, make most of their profit from the larger aircraft, so the viability of maintaining production of small, single engine piston aircraft is in question.

Industry observers speculate that Cessna will obviously dominate the market at their expected production quantities, but it is unclear what the full effect will be on the current producers. It will take several years before most firms realize any major savings on liability costs that can then be reinvested in research and development of new products. Thus, the cost of new aircraft will probably not decline as a direct result of this legislation. However, the reentry of Cessna into the market at relatively large quantities may offer some positive externalities for its competitors. The firms that compete with Cessna will buy many of same sub-components used by Cessna, so this might result in some economy of scale savings for all. Since the existing firms have relatively stable costs at their current levels of production and Cessna is having to make new investments, there is the possibility that Cessna will have higher costs initially. Therefore, Piper and the rest of the firms might end up with relatively lower costs as well as the possibility of price reductions on some sub-components.

The legal profession will not ignore aviation just because the rules have changed slightly. The new statute of repose will only serve as a constraint on their optimization

⁵⁷ Haines, Thomas B., "The New Piper's Chuck Suma," AOPA Pilot, February 1996.

problem to maximize their income. This means they will focus attention on the next best set of possible defendants to gain wealth transfers. Obviously, they will continue to aggressively take pursue case in those accidents involving the newer aircraft, but this is less than half of the original market. Instead, they will refocus their sights on the remaining sources of wealth not covered by the statute. This will be the aircraft owners and pilots, the fixed based operators, the aircraft dealerships, the maintenance personnel, parts suppliers and the airport operators.

Richard Collins (1995) notes that the owners will be the first targets.⁵⁸ Under Federal Aviation Administration regulations the owner is totally responsible for the total upkeep and maintenance as well as adherence to Federal Aviation Administration mandates. After the plane is sold (which occurs every three or four years for most planes), the old owner may be liable if the plane crashes in the future. The plaintiffs attorneys will attempt to show the owner failed to adequately maintain the plane or failed to meet Federal Aviation Administration directives and then failed to disclose the defects prior to the sale. Maintenance personnel will also be targets, but most aircraft maintenance personnel are free lance individuals with minimal assets. The biggest defense to the owner will be a thorough annual inspection prior to the sale by a well established, wealthy maintenance facility. Thus, if an owner has a choice between the local, relatively cheap airport mechanic or the high prices corporate repair facility, he will opt for the larger facility (at least for the last inspection). Note that the interest group imposed regulations are changing the market structure and affecting the basic general aviation market economy. The pilots and local airport support personnel who supported this statute of repose bill probably had no idea it would shift the liability costs to them and away from the manufacturers. As owners, they

⁵⁸ Collins, Richard, "Repose, Depose, Suppose," Flying, August 1995.

must now increase precautionary maintenance (x^*) to lower their liability costs (y^*) when they become sellers and potential defendants. This will undoubtedly increase owner insurance costs since they will become a primary target after a crash (assuming they are not the primary victim). Since most plaintiffs are the survivors of the pilot/owner involved in the crash, there may be no one to sue using this approach.

This will have a positive effect on the sales of newer aircraft market since the manufacturer will still share much of the liability burden. The effect on older used aircraft will be mixed. The increased liability exposure will force the owners to increase y^* , increase their personal liability insurance and increase the price of the used aircraft. However, this should also result in safer used aircraft. The fixed-base operator who maintains and rents the older aircraft will have to increase his liability insurance since he is now shouldering most of the burden for his older rental fleet.

The 18 year statute of repose starts over for newly installed repair parts, so most after-market subcomponent suppliers will find themselves under greater scrutiny. I believe this will hurt some of these industries since they will find the sales too small to cover the higher expected liability expenses. The firms that make flight critical parts⁵⁹ will be the worst hit since they will be obvious targets for investigation.

The value of this statute of repose to the total general aviation market will be determined by either the increase or decrease in total liability costs. If the liability costs are merely shifted from one group within the market (manufacturers) to another (pilots) then the bill

⁵⁹ Flight critical parts are those needed for the safe operation of the aircraft. These would include any part whose failure might result in a dangerous situation that could lead to a crash or contribute to significant injuries in one.

was just an internal wealth transfer. This type of result will not cause the industry to rebound. However, if the bill serves as a "poison pill" and the lawyers focus their attention elsewhere on easier targets, then the statute may contribute to the rejuvenation of the industry.

The success of these types of statutes are still being debated. From a strictly analytical view, a constrained optimization problem with binding constraints will not produce a pareto optimal solution. But, the specific industry (general aviation) may benefit at the expense of other markets or the legal profession. A recent study by the National Bureau of Economic Research⁶⁰ provided some support that tort reform can have positive economic effects. The study looked at states that had imposed liability limits and other forms of tort reform from 1969 to 1990, finding a strong correlation between the those states with laws limiting liability and production and growth. The study showed that in 14 of 17 industries examined, the results were positive. In the industries with improvement, employment grew by almost 18 percent in miscellaneous repair services, 23 percent in amusement and recreation, and 25 percent in motion pictures. The report stated that output per worker also grew, but at a lower rates. The study also showed that in states where plaintiff-friendly laws were enacted, employment fell. The authors do concede the study did not consider any shifting of costs to the government or insurance companies for uncompensated victims or the victims left with the full cost of their accidents.

⁶⁰ Schmitt, Richard, "Study of States Finds Tort Reform Sparked Economic Growth, Jobs," Wall Street Journal, September 18, 1995.

Chapter Summary

This chapter demonstrated the importance of rules and structures as they affect interest groups' rent-seeking efforts. The eight year battle to have an aviation tort reform bill released from committee provides further evidence of Shepsle and Weingast's (1981) structurally induced equilibrium theory. One set of rules was used to provide rent-protection (committee gate-keeping powers) while another (discharge petition) was used to support the same legislation.

This case study of the AOPA provides further evidence and support for interest group theory. The research showed that AOPA's political strength did not develop until the organization first established itself as a provider of desired member benefits sufficient to discourage free-ridership. It was only after this base of member services was established that AOPA was able to effectively lobby at low marginal cost to its members.

In the aftermath of the tort reform passage, two conclusions can be made. First, the bill appears to have focused its benefits on one company, Cessna. Cessna gained the most significant reduction in its liability tail and is the only firm making any large changes in its market participation. Second, there has yet to be any significant price reductions apparent to the general pilot population as a result of their support for this bill. Cessna has yet to announce the prices for its new line of single engine piston aircraft, but is unlikely these prices will be significantly lower than those of its competitors. If this is true, then Cessna's rent-seeking efforts may prove quite profitable. They will quickly dominate the market at their announced production levels and realize lower liability costs while the pilots realize reduced opportunities to sue the manufacturers.

Chapter 7. Conclusions

Olson (1982) brought the danger of long established distributional coalitions or interest groups to economists' attention. He demonstrated how nations with politically stable governments and no major social upheavals suffer the most from growth-repressing organizations. In this research, I have taken that idea a step further and provided evidence how interest group rent-seeking can negatively affect the growth of an individual industry. Though I only look at the single engine piston aircraft industry, I am confident that further research in other industries will show a similar trend, which in the aggregate becomes Olson's decline of nations.

In the case of this segment of aviation, I demonstrated that the decline was due to the combined effects of rent-seeking from several sources, both positive and negative. The major source currently hurting the industry according to industry spokesmen has been the rise in liability costs due to increased litigation. As I described, the legal profession has used its influence in the legislatures and courts to influence the structure of the judicial process, the form of tort legislation and the rules governing the use of the judicial system--all in an attempt to maximize wealth transfers to themselves. The general aviation industry has also been under attack from organized landowners, land developers and local governments. The result has been a loss of airports and infrastructure previously used to support general aviation activities. This has increased the cost of flying to the aviation community while providing positive benefits to the anti-aviation interest groups. General aviation suffered a loss of support facilities when the airlines were deregulated under

pressure from the airline industry and its supporters. The general aviation industry also has been hurt by Federal Aviation Administration regulations that increase the costs of flying through new training, equipment requirements, and medical regulations. General aviation benefited from rent-seeking in the past with the G.I. Bill, infrastructure support and tax credits. However, these all eventually were weakened or eliminated. I think the evidence is convincing that these rent-seeking activities have negatively affected this industry. Yet, it is not as clear as to the magnitude of the effect compared to what might have occurred under non-rent-seeking conditions.¹

A second major result is the support this research shows for structure induced equilibrium as defined by Shepsle and Weingast (1981). The restrictions placed by institutions on the legislative and judicial process are very important in determining the final equilibrium. In this case, the tort reform legislation was bottled up in the lawyer-dominated judiciary committee for almost ten years due to the agenda control under the existing House rules. A discharge petition process existed which allowed bills to reach the floor despite committee objections if a majority of House members supported the bill. Yet, the rules governing the secret discharge petition allowed for vote trading and agenda control through behind the scene politics. The key that broke the deadlock on this particular bill was a change in the rules to make the discharge petition public, thus weakening the agenda control of the committee. These results add to the growing body of evidence against the Chicago positions [Stigler (1971), Becker (1983) and Peltzman (1976)] that structure does not play a major role in political outcomes.

¹ It is academically interesting to consider how this or any industry might fare if it was free of all rent-seeking effects. Yet, even if one could filter out all of the direct rent-seeking within the industry, you would still have to deal with the effects of rent-seeking on the rest of the entire economy which would be impossible. The industry is too integrated into and affected by the rest of the economy to ignore the effects from the external economy.

The structure of the judicial and legislative systems aided in the legal profession's ability to rent-seek against the general aviation community. As mentioned above, the legal profession's control of the judiciary committee prevented passage of the tort reform bill for almost ten years. As shown in chapter four, the lawyers' influence in the court system controls access to the court system and the costs of those forced to use this system. Most plaintiffs in civil cases acquire lawyers' services under a contingency fee arrangement that typically provides the attorneys one third of the total award--often a significant amount if the plaintiff wins. The shift in tort liability from a contributory negligence system toward strict liability has increased the number of cases that the manufacturers must defend against and allowed more plaintiffs to receive awards.

This research also analyzed the market for lawyers and how the judicial and legislative structures benefited their rent-seeking. This profession manipulated the rules of these institutions to increase their wealth. The data indicated that there was a significant increase in the number of lawyers beginning in the 1960s, but no evidence as to an increased demand for their services. In order for these attorneys to earn income, they had to expand the market for their services. First, they adopted a contingency fee system that allowed potential lower to middle income plaintiffs access to litigation. Then, the legal profession changed their rules of ethics to allow for advertising which helped attract these new clients. This increased the number of potential clients, so the lawyers focused their efforts on expanding the number of potential defendants. First, through a long period of precedent setting court cases along with theoretical support from legal scholars, the court changed from a contributory negligence standard toward a strict liability one. As I showed in Chapter four, this move expanded the potential wealth of the lawyers by increasing the number of cases and reducing some of the information costs.

The next step was to widen the scope of the possible defendants by convincing the courts to allow joint and several liability. This targeted defendants with the deepest pockets, not necessarily those with the greatest levels of responsibility. The last element targeted was to challenge the definition of y^* , since it often provided the best defense for the manufacturer. This was done on two fronts. The manufacturer's greatest defense under comparative or contributory negligence was that they invested in the appropriate level of y^* . This level was determined by past court decisions and often times by credible, independent testing agencies such as the Federal Aviation Administration or the National Safety Transportation Board. Shrewd plaintiff attorneys created the image in the jury's minds that manufacturers who invested in previously accepted levels of y^* were negligent and in reality only investing in $y < y^*$. This strategy was difficult to defend against since many of the aircraft involved in the lawsuits were old and built under different design standards. This strategy required the second important element--juries. Juries are not as hampered by legal precedent or strict interpretation of the law as are judges. Juries can be swayed by graphic evidence and desires of using the courts as a form of social insurance. Thus, they are more likely to believe arguments that past definitions of y^* in the form of FAA certification or manufacturer tests are out of date or faulty. Final approval of these jury decisions is in the hands of the judges and the appeals courts, who then use these decisions to determine the path of the law.

This research also provides evidence that the current liability structure as applied to this industry does not achieve the desired high level of efficiency or safety. The Landes and Posner (1987) models depicted scenarios that would motivate the least cost avoiders to invest in safety through increased care and innovation. Under their model, the increased liability costs should encourage the industry to innovate and we should see a drop in

accidents. In Shavell's case (1980), the increased liability should result in a decrease in the harmful activity along with innovation to improve safety.

This research showed that for the single-engine piston aircraft industry, the rise in liability costs over the last two decades failed to achieve significant accident prevention (by the manufacturers) or efficient transfers to the victims of those accidents. Instead, the industry failed to make major safety innovations due to reduced research and development.² The costs of administering the liability rules have been high with most of the dollars spent going to the lawyers and the legal infrastructure with relatively little going to the victims. Accident rates have flattened out and even risen recently, indicating that the increased liability costs have not necessarily provided increased safety.³ The one thing that has occurred as predicted is that the activity rate (flying hours) continues to decline. The accident data has consistently shown that the major cause of accidents is pilot error. Thus, the current liability system is misguided in its emphasis on targeting the manufacturers. The pilots need to improve their flight skills if the accident rate is too significantly drop much further.⁴ The targeting of the manufacturers is guided by a desire to find a source of wealth to provide compensation to the accident survivors and a greater source of wealth for the attorneys.

There is no doubt that the 1994 General Aviation Revitalization Act was an obvious attempt by the aviation industry and its supporters to defend against the rent-seeking of the

² I do not mean to imply by this statement that the aircraft are unsafe, rather that no major innovations have occurred where safety was the claimed to be the driving force.

³ Recent National Transportation and Safety Board analyze shows the accident rate for 1995 is 2.04 per 100,000 flying hours compared to 1.83 in 1994. AOPA Pilot, March 1996.

⁴ Bruce Landsburg, director of the AOPA Safety Foundation notes that the recent increase in the accident rate signals a need for increased pilot training as the primary means of improving safety. AOPA Pilot, March 1996.

legal profession. Similarly, it was also a rent-seeking action by the general aviation manufacturers to reduce costs at the expense of potential litigants and their attorneys. The winners were obviously the manufacturers who might gain some savings in liability costs as well as a few thousand workers that Cessna has hired to start up its new single engine piston aircraft production facility. An obvious question is did the 350,000 AOPA members gain from this? The results are mixed. A few who have been waiting with a relatively large amount of money to buy a new Cessna will be happy along with any members hired by Cessna. Yet, there is no sign that the manufacturers are going to significantly lower prices on new aircraft that would benefit most pilots. Cessna, as late as Spring 1996 had yet to announce the price of its new 1996 versions of modified 1986 aircraft designs. Piper, who just emerged from bankruptcy announced they would not cut prices despite hints to the contrary before the tort reform bill was passed.⁵ Beechcraft had decided to slow single engine production and may leave this segment of the market to concentrate on turbojets, much as Cessna did a decade ago. Worse, as discussed in Chapter 6, the pilots themselves may be the next target of the lawyers as the legal profession looks for new sources of wealth to replace the manufacturers. If the aviation tort reform bill survives possible court challenges, the lawyers may lose interest in general aviation and look elsewhere for more numerous and deeper pockets. If the rents disappear, so will the rent-seeking.

In the case of aviation tort reform, it appears that the aviation interest groups won a victory over the lawyers at this time. Yet, Olson warns that the crowded agendas of

⁵ Haines, Thomas B., "Pilot to Pilot: The New Piper's Chuck Suma," AOPA Pilot, February 1996, pp. 57-63.

interest groups are hard to fully understand and that their actions may delay moves toward a more efficient state.⁶

"Special-interest groups also slow growth by reducing the rate at which resources are reallocated from one activity or industry to another in response to new technologies or conditions. One obvious way in which they do so is by lobbying for bailouts of failing firms, thereby delaying or preventing the shift of resources to areas where they would have a greater productivity."

In the case of general aviation, it is not clear whether the special interest groups forcing the economy away from greater productivity are the attorneys and their clients or the aviation coalitions. Obviously, the aviation groups would point out the inefficiencies of the high defense costs going to the law firms and the losses to the aviation industry from the current aviation industry recession. These pro-aviation groups would note that the tort reform bill has encouraged Cessna to re-enter the single engine piston field to produce relatively large numbers of aircraft. Yet, the more efficient solution may very well have been the decline of the industry and the transfer of the general aviation resources to other more productive areas, even after considering the inefficiencies of the legal system.

⁶ Olson, Mancur, The Rise and Decline of Nations, Yale University Press, 1982, pp. 36-74.

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